Energy

Glitch Modifications

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TAC: Energy

Sub Code: Energy Conservation

Total Mods for Energy: 39

Date Submitted	3/10/2011	**Section**	101.4.7 , 403.6.2.2	**Proponent**	donny pittman
Chapter	1	**Affects HVHZ**	No	**Attachments**	No

TAC Recommendation Pending Review
Commission Action Pending Review

Comments

General Comments No **Alternate Language** No

Related Modifications

Summary of Modification

Summary of proposed mod: Move the exception for existing mechanical systems to Section 101.4.7.1, Replacement HVAC equipment, and eliminate the language describing the change as an “alteration”. Delete the exception from Section 403.6.2.2.

Rationale

Rationale:
Conflict in code. Because of the meaning of the word “alteration” in the FBC-Existing Building, the exception to 403.6.2.2 implies that a complete replacement of the system would not have to meet current code, which is contrary to Section 101.4.7 and Florida law. There is no impact to small business due to this clarification of code.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code
none

Impact to building and property owners relative to cost of compliance with code
none

Impact to industry relative to the cost of compliance with code
clarifies intent of code

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public
yes,clarifies code

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction
yes

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities
no

Does not degrade the effectiveness of the code
no

101.4.7 Building systems. Thermal efficiency standards are set for the following building systems where new products are installed or replaced in existing buildings, and for which a permit must be obtained. New products shall meet the minimum efficiencies allowed by this code for the following systems:

Heating, ventilating or air conditioning systems;
Service water or pool heating systems;
Electrical systems and motors;
Lighting systems.

Exceptions: [No change to exceptions]
101.4.7.1 Replacement HVAC equipment101.4.7.1.1 Duct sealing upon equipment replacement. [No change.]
101.4.7.1.2 Replacement equipment sizing. [No change.]
101.4.7.3 Existing equipment efficiencies. Existing cooling and heating equipment need not meet the minimum equipment efficiencies of Sections 403.6.2.2 or 403.6.2.3 except to preserve the original approval or listing of the equipment.

403.6.2.2 Minimum efficienciesfor cooling equipment. Cooling equipment installed in residential units shall meet the minimum efficiencies of Tables 503.2.3(1) through 503.2.3(3) and 503.2.3(6) through 503.2.3(8) in Chapter 5 of this code for the type of equipment installed. Equipment used to provide water heating functions as part of a combination system shall satisfy all stated requirements for the appropriate space heating or cooling category.
~~Exception: Existing mechanical systems undergoing alteration need not meet the minimum equipment efficiencies of this section except to preserve the original approval or listing of the equipment.~~

Date Submitted	3/1/2011	**Section**	101.5	**Proponent**	T Stafford
Chapter	1	**Affects HVHZ**	No	**Attachments**	No

TAC Recommendation Pending Review
Commission Action Pending Review

Comments

General Comments No **Alternate Language** No

Related Modifications

Summary of Modification

Change will make Florida Building Code, Energy Conservation consistent with the scoping provisions of the Florida Building Code, Residential.

Rationale

Change will make Florida Building Code, Energy Conservation consistent with the scoping provisions of the Florida Building Code, Residential. The proposed code change will have no impact on small business.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact

Impact to building and property owners relative to cost of compliance with code

No impact

Impact to industry relative to the cost of compliance with code

No impact

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Not applicable. Corrects a conflict within the updated code.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Not applicable. Corrects a conflict within the updated code.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

Not applicable. Corrects a conflict within the updated code.

Does not degrade the effectiveness of the code

Not applicable. Corrects a conflict within the updated code.

101.5 Compliance. R*esidential buildings* ~~less than 4 stories~~ not more than three stories above grade in height shall meet the provisions of Chapter 4. *Commercial buildings* and *residential buildings* greater than 3 storiesshall meet the provisions of Chapter 5.

(no change to the remaining text)

Date Submitted	3/1/2011	**Section**	103.2.1	**Proponent**	T Stafford
Chapter	1	**Affects HVHZ**	No	**Attachments**	No

TAC Recommendation Pending Review
Commission Action Pending Review

Comments

General Comments No **Alternate Language** No

Related Modifications

Summary of Modification

Remove reference to “EnergyGaugeUSA” and “EnergyGauge Summit” software in favor to reference to commission approved software

Rationale

Remove reference to “EnergyGaugeUSA” and “EnergyGauge Summit” software in favor to reference to commission approved software. The proposed code change will have no impact on small business.

Code section numberring is corrected.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact

Impact to building and property owners relative to cost of compliance with code

No impact

Impact to industry relative to the cost of compliance with code

No imapct

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Not applicable. Corrects a conflict within the updated code.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Not applicable. Corrects a conflict within the updated code.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

Not applicable. Corrects a conflict within the updated code.

Does not degrade the effectiveness of the code

Not applicable. Corrects a conflict within the updated code.

103.2 Information on construction documents.

103.2.1 Code demonstration forms. See Table 103.2.1.

103.2.1.1 Residential = 3 stories

103.2.1.1.1 Building thermal envelope alternative. An accurately completed Residential Building Form 402 ~~or FlaResCheck printout~~ shall be submitted to the building official for to demonstrate code compliance by this method.

103.2.1.1.2 Simulated performance alternative. An accurately completed Residential Building Form 405 (generated by the ~~EnergyGauge USA Fla/Res computer program~~ Commission approved software) shall be submitted to the building official to demonstrate code compliance by Section 405.

103.2.1.2Commercial and residential >3 stories.

103.2.1.2.1 Building thermal envelope alternative. An accurately completed Commercial Building Form 502 ~~or FlaComCheck printout~~ shall be submitted to the building official for to demonstrate code compliance by this method.

103.2.1.2.2 Simulated performance alternative, commercial and high-rise residential. An accurately completed Commerical Building Form 506 (generated by the ~~EnergyGauge Summit Fla/Com computer program~~ Commission approved software) demonstrating that code compliance has been achieved shall be submitted to the building official for compliance by Section 506.

Date Submitted	3/7/2011	**Section**	Table 103.2.1	**Proponent**	Ann Stanton
Chapter	1	**Affects HVHZ**	No	**Attachments**	No

TAC Recommendation Pending Review
Commission Action Pending Review

Comments

General Comments No **Alternate Language** No

Related Modifications

4646

Summary of Modification

Revise Table 103.2.1 to remove reference to specific computer programs.

Rationale

Conflict with code adopted during the 2010 code change process. EG USA Fla/Res and EG Summit Fla/Com are no longer referenced by the code.
No impact is anticipated on small business from this correlation.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None due to making the code consistent.

Impact to building and property owners relative to cost of compliance with code

None due to making the code consistent.

Impact to industry relative to the cost of compliance with code

None due to making the code consistent.

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Yes. Make the code consistent.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Yes, makes the code consistent.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

No.

Does not degrade the effectiveness of the code

No.

TABLE 103.2.1

INDEX TO CODE COMPLIANCE FORMS

FORM	WHERE FOUND
Chapter 4 compliance	-
Form 402	Appendix C
Alternate Form 402 ~~(FlaResCheck printout)~~	~~Online: www.energygauge.com~~
Form 405 (Commission approved software printout) ~~(EnergyGauge USA Fla/Res)~~	~~Online: www.energygauge.com~~
Chapter 5 compliance	Appendix C
Form 502	~~Online: www.energygauge.com~~
~~Alternate Form 502 (Fla/Com prescriptive printout)~~	~~Online: www.energygauge.com~~
Form 506 (Commission approved software printout) ~~(EnergyGauge Summit Fla/Com)~~	

Date Submitted	3/1/2011	**Section**	202	**Proponent**	T Stafford
Chapter	2	**Affects HVHZ**	No	**Attachments**	No

TAC Recommendation Pending Review
Commission Action Pending Review

Comments

General Comments No **Alternate Language** No

Related Modifications

Summary of Modification

Add definition back to the code using the definition from the Florida Building Code

Rationale

Add definition back to the code using the definition from the Florida Building Code. The proposed code change will have no impact on small business.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact

Impact to building and property owners relative to cost of compliance with code

No impact

Impact to industry relative to the cost of compliance with code

No impact

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Not applicable. Corrects a conflict within the updated code.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Not applicable. Corrects a conflict within the updated code.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

Not applicable. Corrects a conflict within the updated code.

Does not degrade the effectiveness of the code

Not applicable. Corrects a conflict within the updated code.

AIR CONDITIONING. The treatment of air so as to control simultaneously the temperature, humidity, cleanness and distribution of the air to meet the requirements of a conditioned space.

Date Submitted	3/1/2011	**Section**	202	**Proponent**	T Stafford
Chapter	2	**Affects HVHZ**	No	**Attachments**	No

TAC Recommendation Pending Review
Commission Action Pending Review

Comments

General Comments No **Alternate Language** No

Related Modifications

Summary of Modification

Add definition back to the code using the definition from the Florida Building Code, Mechanical

Rationale

Add definition back to the code using the definition from the Florida Building Code, Mechanical. The proposed code change will have no impact on small business.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact

Impact to building and property owners relative to cost of compliance with code

No impact

Impact to industry relative to the cost of compliance with code

No impact

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Not applicable. Corrects a conflict within the updated code.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Not applicable. Corrects a conflict within the updated code.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

Not applicable. Corrects a conflict within the updated code.

Does not degrade the effectiveness of the code

Not applicable. Corrects a conflict within the updated code.

AIR DISTRIBUTION SYSTEM. Any system of ducts, plenums and air-handling *equipment* that circulates air within a space or spaces and includes systems made up of one or more air-handling units.

Date Submitted	3/1/2011	**Section**	202	**Proponent**	T Stafford
Chapter	2	**Affects HVHZ**	No	**Attachments**	No

TAC Recommendation Pending Review
Commission Action Pending Review

Comments

General Comments No **Alternate Language** No

Related Modifications

Summary of Modification

Add definition back to the code using the definition from the Florida Building Code, Mechanical

Rationale

Add definition back to the code using the definition from the Florida Building Code, Mechanical. The proposed code change will have no impact on small business.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact

Impact to building and property owners relative to cost of compliance with code

No impact

Impact to industry relative to the cost of compliance with code

No impact

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Not applicable. Corrects a conflict within the updated code.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Not applicable. Corrects a conflict within the updated code.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

Not applicable. Corrects a conflict within the updated code.

Does not degrade the effectiveness of the code

Not applicable. Corrects a conflict within the updated code.

WATER HEATER. Any heating *appliance* or *equipment* that heats potable water and supplies such water to the potable hot water distribution system to no greater than 200^0F(93^0C).

Date Submitted	3/1/2011	**Section**	304.1	**Proponent**	T Stafford
Chapter	3	**Affects HVHZ**	No	**Attachments**	No

TAC Recommendation Pending Review
Commission Action Pending Review

Comments

General Comments No **Alternate Language** No

Related Modifications

Summary of Modification

Remove reference to EnergyGauge Summit Fla/Com computer program.

Rationale

Remove reference to EnergyGauge Summit Fla/Com computer program. The proposed code change will have no impact on small business.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact

Impact to building and property owners relative to cost of compliance with code

No impact

Impact to industry relative to the cost of compliance with code

No impact

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Not applicable. Corrects a conflict within the updated code.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Not applicable. Corrects a conflict within the updated code.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

Not applicable. Corrects a conflict within the updated code.

Does not degrade the effectiveness of the code

Not applicable. Corrects a conflict within the updated code.

304.1 Building material thermal properties, general.

304.1.1 Commerical and residential high rise. R-values for *building materials* used to demonstrate code compliance with Chapter 5shall be taken from ASHRAE 90.1 Normative Appendix A, ~~from the EnergyGauge Summit Fla/Com computer program,~~ from manufacturer's product literature or from other nationally recognized engineering sources. Assembly U-factor calculations shall follow the procedure(s) detailed in section 304.3 or be tested in accordance with procedures(s) described in section 304.2.

Concrete block R-values shall be calculated using the isothermal planes method or a two-dimensional calculation program, thermal conductivities from ASHRAE 90.1 Normative Appendix A, ~~from the EnergyGauge Summit Fla/Com program~~ and dimensions from ASTM C90. The parallel path calculation method is not acceptable.

Exception: R-values for *building materials* or thermal conductivities determined from testing in accordance with Section 304.2.

Date Submitted	3/1/2011	**Section**	304.3.1.4	**Proponent**	T Stafford
Chapter	3	**Affects HVHZ**	No	**Attachments**	Yes

TAC Recommendation Pending Review
Commission Action Pending Review

Comments

General Comments No **Alternate Language** No

Related Modifications

Summary of Modification

Remove reference to EnergyGauge Summit Fla/Com computer program.

Rationale

Remove reference to EnergyGauge Summit Fla/Com computer program. The proposed code change will have no impact on small business.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact

Impact to building and property owners relative to cost of compliance with code

No impact

Impact to industry relative to the cost of compliance with code

No impact

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Not applicable. Corrects a conflict within the updated code.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Not applicable. Corrects a conflict within the updated code.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

Not applicable. Corrects a conflict within the updated code.

Does not degrade the effectiveness of the code

Not applicable. Corrects a conflict within the updated code.

304.3.1.4 The R-value for cavity ~~airspaces included in the EnergyGauge Summit Fla/Com program~~ are taken from ASHRAE 90.1 Normative Appendix A. No credit shall be given for airspaces in cavities that contain any insulation or less than 0.5 inch (12.7 mm). The values for 3.5 inch (84 mm) cavities shall be used for cavities of that width and greater.

304.3.1.4 The R-value for cavity airspaces ~~included in the EnergyGauge Summit Fla/Com program are~~ shall be taken from ASHRAE 90.1 Normative Appendix A. No credit shall be given for airspaces in cavities that contain any insulation or less than 0.5 inch (12.7 mm). The values for 3.5 inch (84 mm) cavities shall be used for cavities of that width and greater.

Date Submitted	3/1/2011	**Section**	Table 301.1	**Proponent**	T Stafford
Chapter	3	**Affects HVHZ**	No	**Attachments**	No

TAC Recommendation Pending Review
Commission Action Pending Review

Comments

General Comments No **Alternate Language** No

Related Modifications

Summary of Modification

Table is from IECC change cleans up table to show only Florida Information.

Rationale

Delete “by State” and “and Territory” for the table heading. Delete the key and the asterisks as all counties in the State. Add Dade County in Zone 1 as it was left out of the Table. The proposed code change will have no impact on small business.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact

Impact to building and property owners relative to cost of compliance with code

No impact

Impact to industry relative to the cost of compliance with code

No impact

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Not applicable. Corrects a conflict within the updated code.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Not applicable. Corrects a conflict within the updated code.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

Not applicable. Corrects a conflict within the updated code.

Does not degrade the effectiveness of the code

Not applicable. Corrects a conflict within the updated code.

TABLE 301.1

CLIMATE ZONES, MOISTURE REGIMES, AND WARM-HUMID DESIGNATIONS BY ~~STATE,~~ COUNTY ~~AND TERRITORY~~

~~**Key: A – Moist, Asterisk (*) indicates a warm-humid location**~~.

COUNTY	CLIMATE ZONE	COUNTY	CLIMATE ZONE	COUNTY	CLIMATE ZONE
Alachua	~~2A*~~ 2A	Hamilton	~~2A*~~ 2A	Okaloosa	~~2A*~~ 2A
Baker	~~2A*~~ 2A	Hardee	~~2A*~~ 2A	Okeechobee	~~2A*~~ 2A
Bay	~~2A*~~ 2A	Hendry	~~2A*~~ 2A	Orange	~~2A*~~ 2A
Bradford	~~2A*~~ 2A	Hernando	~~2A*~~ 2A	Osceola	~~2A*~~ 2A
Brevard	~~2A*~~ 2A	Highlands	~~2A*~~ 2A	Palm Beach	~~2A*~~ 2A
Broward	~~1A*~~ 1A	Hillsborough	~~1A*~~ 2A	Pasco	~~1A*~~ 2A
Calhoun	~~2A*~~ 2A	Holmes	~~2A*~~ 2A	Pinellas	~~2A*~~ 2A
Charlotte	~~2A*~~ 2A	Indian River	~~2A*~~ 2A	Polk	~~2A*~~ 2A
Citrus	~~2A*~~ 2A	Jackson	~~2A*~~ 2A	Putnam	~~2A*~~ 2A
Clay	~~2A*~~ 2A	Jefferson	~~2A*~~ 2A	Santa Rosa	~~2A*~~ 2A
Collier	~~2A*~~ 2A	Lafayette	~~2A*~~ 2A	Sarasota	~~2A*~~ 2A
Columbia	~~2A*~~ 2A	Lake	~~2A*~~ 2A	Seminole	~~2A*~~ 2A
Dade	**1A**	Lee	~~2A*~~ 2A	St. Johns	~~2A*~~ 2A
Desoto	~~2A*~~ 2A	Leon	~~2A*~~ 2A	St. Lucie	~~2A*~~ 2A
Dixie	~~2A*~~ 2A	Levy	~~2A*~~ 2A	Sumter	~~2A*~~ 2A
Duval	~~2A*~~ 2A	Liberty	~~2A*~~ 2A	Suwannee	~~2A*~~ 2A
Escambia	~~2A*~~ 2A	Madison	~~2A*~~ 2A	Taylor	~~2A*~~ 2A
Flagler	~~2A*~~ 2A	Manatee	~~2A*~~ 2A	Union	~~2A*~~ 2A
Franklin	~~2A*~~ 2A	Marion	~~2A*~~ 2A	Volusia	~~2A*~~ 2A
Gadsden	~~2A*~~ 2A	Martin	~~2A*~~ 2A	Wakulla	~~2A*~~ 2A
Gilchrist	~~2A*~~ 2A	Miami-Dade	~~2A*~~ 2A	Walton	~~2A*~~ 2A
Glades	~~2A*~~ 2A	Monroe	~~2A*~~ 2A	Washington	~~2A*~~ 2A
Gulf	~~2A*~~ 2A	Nassau	~~2A*~~ 2A		

Date Submitted	3/8/2011	**Section**	304.3.1.4	**Proponent**	Ann Stanton
Chapter	4	**Affects HVHZ**	No	**Attachments**	No

TAC Recommendation Pending Review
Commission Action Pending Review

Comments

General Comments No **Alternate Language** No

Related Modifications

4652

Summary of Modification

Remove reference to EnergyGauge Summit computer program and fix text to directly require that information be taken from Normative Appendix A of ASHRAE 90.1.

Rationale

Conflict with the updated code and unintended results from integration of previous code. Make consistent with mods to code that remove reference to the EG Summit program. The word "airspaces" should not be deleted; it is essential to the meaning of the section. Also, the words "are taken" refer to data in EG Summit that were taken from ASHRAE 90.1 Normative Appendix A. Tables from Normative Appendix A were included in Chapter 13, Appendix B, Section B1.2.1.4 of the FBC-B 2007, which stated "The R-value for cavity airspaces shall be taken from Table B-1...." EG Summit includes the Normative Appendix A tables, which the current code states shall be used for cavity airspaces in the calculation.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact on enforcement of code.

Impact to building and property owners relative to cost of compliance with code

No impact to building and property owners.

Impact to industry relative to the cost of compliance with code

No impact to industry, includin small business, relative to compliance with code.

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Yes, clarifies the intent of the code and fixes conflict in code.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Yes, clarifies the intent of the code and fixes conflict in code.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

No, clarifies the intent of the code and fixes conflict in code.

Does not degrade the effectiveness of the code

No.

304.3.1.4 The R-value for cavity airspaces ~~included in the EnergyGauge Summit Fla/Com program are~~ shall be taken from ASHRAE 90.1 Normative Appendix A. No credit shall be given for airspaces in cavities that contain any insulation or less than 0.5 inch (12.7 mm). The values for 3.5 inch (84 mm) cavities shall be used for cavities of that width and greater.

Date Submitted	3/8/2011	**Section**	304.3.2.1	**Proponent**	Ann Stanton
Chapter	4	**Affects HVHZ**	No	**Attachments**	No

TAC Recommendation Pending Review
Commission Action Pending Review

Comments

General Comments No **Alternate Language** No

Related Modifications

4767

Summary of Modification

Remove reference EnergyGauge Summit computer program and directly reference ASHRAE 90.1 Normative KAppendix A.

Rationale

Correct conflict in code due to the mods that deleted reference to EnergyGauge Summit. Return reference to source of 2007 code, ASHRAE 90.1 Normative Appendix A. There is no impact on small business from this correction.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None due to this correction.

Impact to building and property owners relative to cost of compliance with code

None due to this correction.

Impact to industry relative to the cost of compliance with code

None due to this correction.

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Yes, correction to clarify code.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Yes, correction to clarify code.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

No, correction to clarify code.

Does not degrade the effectiveness of the code

No.

304.3.2.1 Pre-calculated assembly U-factors, C-factors, F-factors, or heat capacities. The *U-factors*, *C-factors, F-factors,* and *heat capacities* for typical construction assemblies ~~included in the EnergyGauge Summit Fla/Com computer program are taken~~ from ASHRAE 90.1 Normative Appendix A. ~~These values~~ shall be used for all calculations unless otherwise allowed by applicant-determined assembly U-factors, C-factors, F-factors, or heat capacities. Interpolation between values for *rated R-values of insulation*, including insulated sheathing is allowed; extrapolation beyond values in the ASHRAE 90.1 Normative Appendix A tables is not allowed.

Date Submitted	3/17/2011	**Section**	402.1.1.3	**Proponent**	Ann Stanton
Chapter	4	**Affects HVHZ**	No	**Attachments**	No

TAC Recommendation Pending Review
Commission Action Pending Review

Comments

General Comments No **Alternate Language** No

Related Modifications

Summary of Modification

Reference correct sections of code. Remove reference to Sec. 405.

Rationale

Resolve conflict in code. Section numbers need to be correct and clear. Section 405 should not be referenced from Table 402.1.1.3 because the table is not used in the Sec. 405 Standard Reference Design as the IECC does. Small business should not be impacted by this mod.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None.

Impact to building and property owners relative to cost of compliance with code

None.

Impact to industry relative to the cost of compliance with code

None.

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Yes.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Yes.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

No.

Does not degrade the effectiveness of the code

No.

TABLE 402.1.1.3

EQUIVALENT U-FACTORS[a,f,g]

[No change to table except footnote d and f as shown below.}

d. Foundation U-factor requirements shown in Table 402.1.1.3 include wall construction and interior air films but exclude soil conductivity and exterior air films. U-factors for determining code compliance in accordance with Section 402.1.1.3 ~~2~~ (total UA alternative) ~~of Section 405 (Simulated Performance Alternative)~~ shall be modified to include soil conductivity and exterior air films.

f. Limitations to compliance by Section 402 found in Section 402.1.2 shall be met.

402.1.1.2.*U*-factor alternative. An assembly with a *U*-factor equal to or less than that specified in Table 402.1.1.3 shall be permitted as an alternative to the corresponding component *R*-value in Table 402.1.1. All other prescriptive criteria of Table 402.1.1, the prescriptive criteria in Section 402.1.2.5 and footnotes to Table 402.1.1.3 shall be met.

402.1.1.3 Total UA alternative. If the total *building thermal envelope* UA (sum of *U*-factor times assembly area) is less than or equal to the total UA resulting from using the *U*-factors in Table 402.1.1.3 (multiplied by the same assembly area as in the proposed building), the building shall be considered in compliance with Table 402.1.1.3. All other prescriptive criteria of Table 402.1.1, the prescriptive criteria in Section 402.1.2.5 and footnotes to Table 402.1.1.3 shall be met. The UA calculation shall be done using a method consistent with the ASHRAE *Handbook of Fundamentals* and shall include the thermal bridging effects of framing materials. The SHGC requirements of Table 402.1.1 shall be met in addition to UA compliance.

Date Submitted	3/17/2011	**Section**	402.1.1	**Proponent**	Ann Stanton
Chapter	4	**Affects HVHZ**	No	**Attachments**	No

TAC Recommendation Pending Review
Commission Action Pending Review

Comments

General Comments No **Alternate Language** No

Related Modifications

Summary of Modification

Remove language refering to climate zones in Chapter 3.

Rationale

Conflict in code. No climate zone is included in Table 402.1.1. Only one set of criteria is provided for the state. No impact on small business is anticipated from this mod.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None.

Impact to building and property owners relative to cost of compliance with code

None.

Impact to industry relative to the cost of compliance with code

None.

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Yes, eliminates are of possible confusion.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Yes.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

No.

Does not degrade the effectiveness of the code

No.

402.1.1 Insulation and fenestration criteria. The building thermal envelope shall meet the requirements of Table 402.1.1 ~~based on the climate zone specified in Chapter 3~~.

Date Submitted	3/1/2011	**Section**	402.5	**Proponent**	T Stafford
Chapter	4	**Affects HVHZ**	No	**Attachments**	No

TAC Recommendation Pending Review
Commission Action Pending Review

Comments

General Comments No **Alternate Language** No

Related Modifications

Summary of Modification

Section 402.5 was eliminated so the exception is not needed.

Rationale

Section 402.5 was eliminated so the exception is not needed. . The proposed code change will have no impact on small business.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No imapct

Impact to building and property owners relative to cost of compliance with code

No impact

Impact to industry relative to the cost of compliance with code

No impact

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Not applicable. Corrects a conflict within the updated code.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Not applicable. Corrects a conflict within the updated code.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

Not applicable. Corrects a conflict within the updated code.

Does not degrade the effectiveness of the code

Not applicable. Corrects a conflict within the updated code.

402.5 Exception

~~**Exception:** If the window area-weighted average overhang depth for the entire dwelling unit is 4.0 feet or greater, the area-weighted average maximum SHGC requirement of 0.50 does not need to be met.~~

Date Submitted	3/10/2011	**Section**	403.9.1.1, Table 504.2	**Proponent**	Ann Stanton
Chapter	4	**Affects HVHZ**	No	**Attachments**	No

TAC Recommendation Pending Review
Commission Action Pending Review

Comments

General Comments No **Alternate Language** No

Related Modifications

Summary of Modification

Include new gas pool heater efficiency requirements effective 4/16/13.

Rationale

Conflict with revised federal standard. The minimum efficiency of gas and oil-fired pool heaters has been changed by the US Dept of Energy in their notice in the Federal Register, Vol. 75, Friday, April 16, 2010. Small business is aware of this change and plan to comply.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact relative to enforcement.

Impact to building and property owners relative to cost of compliance with code

This is a national requirement; potential increases in cost are expected to be offset by increases in energy savings.

Impact to industry relative to the cost of compliance with code

The pool industry is gearing up for this standard revision.

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Will make gas pool heaters installed after 4/16/13 less expensive to operate.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Yes.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

No.

Does not degrade the effectiveness of the code

No.

403.9.1.1 Gas and oil-fired pool and spa heaters. All gas- and oil-fired pool and spa heaters shall have a minimum thermal efficiency of 78 percent for heaters manufactured before April 16, 2013 and not less than 82 percent for heaters manufactured on or after April 16, 2013 when tested in accordance with ANSI Z 21.56. Pool heaters fired by natural gas shall not have continuously burning pilot lights.

TABLE 504.2

Minimum Performance of Water-Heating Equipment

[no other changes proposed to table]

Equipment Type	Size Category (input)	Subcategory or Rating Condition	Performance Required[1,2]	Test Procedure
Pool heaters, Gas and Oil	All	--	78% E_t before 4/16/2013 82% E_t after 4/16/2013	ASHRAE 146

Date Submitted	3/18/2011	**Section**	403.9	**Proponent**	Jennifer Hatfield
Chapter	4	**Affects HVHZ**	No	**Attachments**	No

TAC Recommendation Pending Review
Commission Action Pending Review

Comments

General Comments No **Alternate Language** No

Related Modifications

4864, 4863

Summary of Modification

Replaces a reference to FL Standards with national consensus standards needed to follow state law that requires energy efficiencies for pools and spas.

Rationale

This proposed code change falls within the glitch criteria stated. It replaces a reference to FL Standards with national consensus standards needed to follow state law that requires energy efficiencies for pools and spas. The national consensus standards follow what was addressed in the FL Standards. Slight edits in the body of the code were also addressed to ensure consistency with the national standards. Small business will not be affected by this modification.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None

Impact to building and property owners relative to cost of compliance with code

None

Impact to industry relative to the cost of compliance with code

None

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Not applicable, standard update.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Improves the code by replacing Florida Standard references that were necessary at the time with national consensus standard references.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

It does not.

Does not degrade the effectiveness of the code

It does not.

403.9 Swimming p~~P~~ools, inground spas, and portable spas (Mandatory). The energy requirements for residential pools and inground spas shall be as specified in Sections 403.9.1 through 403.9.4 and ANSI/APSP-15. The energy requirements for portable spas shall be in accordance with Section 403.9.5 and ANSI/APSP-14. ~~Pools shall be provided with energy-conserving measures in accordance with Sections 403.9.1 through 403.9.43 and compliance criteria found in Appendix D – Florida Standards, Florida Standard No. 1-2 (FL-1-2), Florida regulatory requirements for energy efficiency for residential inground swimming pools and spas, and Florida Standard No. 2-3 (FL-2-3), Florida regulatory requirements for portable spa energy efficiency.~~.

403.9.1 Pool and spa heaters. All pool heaters shall be equipped with a readily *accessible* on-off switch that is mounted outside the heater to allow shutting off the heater without adjusting the thermostat setting.

403.9.1.1 Gas and oil-fired pool and spa heaters. All gas- and oil-fired pool and spa heaters shall have a minimum thermal efficiency of 78 percent when tested in accordance with ANSI Z 21.56. Pool heaters fired by natural or LP gas shall not have continuously burning pilot lights.

403.9.1.2 Heat pump pool heaters. Heat pump pool heaters shall have a minimum COP of 4.0 when tested in accordance with ARI 1160, Table 2, Standard Rating Conditions-Low Air Temperature. A test report from an independent laboratories is required to verify procedure compliance.

~~**403.9.1.3 Portable spa standby power**. Portable electric spa standby power shall not be greater than 5(V2/3) watts where V = the total volume, in gallons, when spas are measured in accordance with the spa industry test protocol.~~

403.9.2 Time switches. Time switches shall be installed to control ~~on~~ swimming pool heaters and pumps that can automatically turn ~~off and on~~ the heaters and pumps off and on according to a preset schedule ~~shall be installed on swimming pool heaters and pumps~~.

Exceptions:

1. Where public health standards require 24-hour pump operation.

2. Where pumps are required to operate solar- and waste-heat-recovery pool heating systems.

3. Where pumps are powered exclusively from on-site renewable generation.

403.9.3 ~~Pool c~~Covers. Heated swimming pools and inground permanently installed spas shall be equipped with a vapor-retardant ~~pool~~ cover on or at the water surface or a liquid cover or other means proven to reduce heat loss. ~~Pools heated to more than 90°F (32°C) shall have a pool cover with a minimum insulation value of R-12.~~

Exception: Outdoor p~~P~~ools deriving over 70 ~~60~~ percent of the energy for heating from site-recovered energy or solar energy source computed over an operating season.

403.9.4 ~~Pool design.~~ Residential pool pumps and pump motors. Pool filtration pump motors shall meet the following requirements~~, along with the compliance criteria provided for in FL-1-2, Appendix D.~~

~~**403.9.4.1 Pool pump motors.** Pool pump motors shall meet the following criteria~~:

1. Pool pump motors shall not be split-phase, shaded-pole or capacitor start-induction run types.

2. Pool pumps and pool pump motors with a total horsepower (HP) of = 1 HP shall have the capability of operating at two or more speeds. The low speed shall have a rotation rate of no more than ½ of the motor's maximum rotation rate.

3. Pool pumps motor controls for use with a two-speed, multi-speed, or variable-speed pump shall have the capability of operating the pool pump at a minimum of two speeds. The default circulation speed shall be the residential filtration speed, with a higher speed override capability for a temporary period not to exceed one normal cycle or ~~120 minutes~~ 24 hours, whichever is less.

Exception: Solar pool heating systems shall be permitted to run at higher speeds during periods of usable solar heat gain.

403.9.5 Portable spa standby power. Portable electric spa standby power shall not be greater than 5(V2/3) watts where V = the total volume, in gallons, when spas are measured in accordance with the spa industry test protocol provided in ~~FL-2 3, Appendix D~~ANSI/APSP-14.

Date Submitted	3/1/2011	**Section**	405.4.3	**Proponent**	T Stafford
Chapter	4	**Affects HVHZ**	No	**Attachments**	No

TAC Recommendation Pending Review
Commission Action Pending Review

Comments

General Comments No **Alternate Language** No

Related Modifications

Summary of Modification

Renumber subparagraph 2 and 3 to 1 and 2 due to the elimination od subparagraph 1

Rationale

Renumber subparagraph 2 and 3 to 1 and 2 due to the elimination od subparagraph 1. The proposed code change will have no impact on small business.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact

Impact to building and property owners relative to cost of compliance with code

No impact

Impact to industry relative to the cost of compliance with code

No impact

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Not applicable. Corrects a conflict within the updated code.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Not applicable. Corrects a conflict within the updated code.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

Not applicable. Corrects a conflict within the updated code.

Does not degrade the effectiveness of the code

Not applicable. Corrects a conflict within the updated code.

405.4.3 Additional documentation. The code official shall require the following documents:

1.~~2.~~ An EPL Display Card signed by the builder providing the building component characteristics of the proposed design shall be provided to the purchaser of the home at time of title transfer.

2. ~~3.~~ Documentation of the component efficiencies used in the software calculations for the proposed design.

Date Submitted	3/3/2011	**Section**	502.1	**Proponent**	T Stafford
Chapter	5	**Affects HVHZ**	No	**Attachments**	No

TAC Recommendation Pending Review
Commission Action Pending Review

Comments

General Comments No **Alternate Language** No

Related Modifications

EN4744

Summary of Modification

Change reference to 2 tables added to the code. If EN4744 is approved the change is not needed.

Rationale

Correct typographical error in section format. If Mod EN4744 is approved the change is not needed. The proposed code change will have no impact on small business.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact

Impact to building and property owners relative to cost of compliance with code

No impact

Impact to industry relative to the cost of compliance with code

No impact

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Not applicable. Corrects a conflict within the updated code.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Not applicable. Corrects a conflict within the updated code.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

Not applicable. Corrects a conflict within the updated code.

Does not degrade the effectiveness of the code

Not applicable. Corrects a conflict within the updated code.

502.1 General (Prescriptive).

502.1.1 Insulation and fenestration criteria.

502.1.1.1 Shell buildings, renovations and alterations. The *building thermal envelope* shall meet the requirements of Tables 502.1.1.1(1) or Table 502.1.1.1(2), as applicable. See Section 101.4.3.

502.1.1.~~1~~.2 *U*-factor alternative. An assembly with a *U*-factor, *C*-factor, or *F*-factor equal or less than that specified in ~~Table 502.1.1.1~~ **Tables 502.1.1.1(1) or Table 502.1.1.1(2)** shall be permitted as an alternative.

1. Renumber 502.1.1.1.2 to 502.1.1.2 to be consistent with format.

2. There is no Table 502.1.1.1, reference should be to the 2 new tables 502.1.1.1 (1) and 502.1.1.1(2).

Date Submitted	3/3/2011	**Section**	502.2.1.1	**Proponent**	T Stafford
Chapter	5	**Affects HVHZ**	No	**Attachments**	No

TAC Recommendation Pending Review
Commission Action Pending Review

Comments

General Comments No **Alternate Language** No

Related Modifications

EN4744

Summary of Modification

There is no Table 502.1.1.1, reference should be to the 2 new tables 502.1.1.1 (1) and 502.1.1.1(2).

Rationale

Correct typographical error in section format. If Mod EN4744 is approved the change is not needed. The proposed code change will have no impact on small business.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact

Impact to building and property owners relative to cost of compliance with code

No impact

Impact to industry relative to the cost of compliance with code

No impact

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Add identification of code volume to be consistent with Florida Code.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Add identification of code volume to be consistent with Florida Code.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

Add identification of code volume to be consistent with Florida Code.

Does not degrade the effectiveness of the code

Add identification of code volume to be consistent with Florida Code.

502.2 Specific insulation requirements (Prescriptive).

502.2.1 Roof assembly.

502.2.1.1 Shell buildings, renovations and alterations. The sum of the installed insulating material installed R-Values shall meet the minimum thermal resistance requirements as specified in ~~Table 502.1.1.1~~ **Tables 502.1.1.1(1) or Table 502.1.1.1(2)**

Date Submitted	3/3/2011	**Section**	502.2.2	**Proponent**	T Stafford
Chapter	5	**Affects HVHZ**	No	**Attachments**	No

TAC Recommendation Pending Review
Commission Action Pending Review

Comments

General Comments No **Alternate Language** No

Related Modifications

EN4744

Summary of Modification

There is no Table 502.1.1.1, reference should be to the 2 new tables 502.1.1.1 (1) and 502.1.1.1(2).

Rationale

Correct typographical error in section format. If Mod EN4744 is approved the change is not needed. The proposed code change will have no impact on small business.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact

Impact to building and property owners relative to cost of compliance with code

No impact

Impact to industry relative to the cost of compliance with code

No impact

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Add identification of code volume to be consistent with Florida Code.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Add identification of code volume to be consistent with Florida Code.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

Add identification of code volume to be consistent with Florida Code.

Does not degrade the effectiveness of the code

Add identification of code volume to be consistent with Florida Code.

502.2.2 Walls.

502.2.2.1 Shell buildings, renovations and alterations.

502.2.2,1.1 Above-grade walls. The minimum thermal resistance (*R*-value) of the insulating material(s) installed in the wall cavity between the framing members and continuously on the walls shall be as specified in ~~Table 502.1.1.1~~ **Tables 502.1.1.1(1) or Table 502.1.1.1(2)**, based on framing type and construction materials used in the wall assembly. The *R*-value of integral insulation installed in concrete masonry units (CMU) shall not be used in determining compliance with ~~Table 502.1.1.1~~ **Tables 502.1.1.1(1) or Table 502.1.1.1(2)**

502.2.2.1.2 Below-grade walls. The minimum thermal resistance (*R*-value) of the insulating material installed in, or continuously on, the below-grade walls shall be as specified in ~~Table 502.1.1.1~~ **Tables 502.1.1.1(1) or Table 502.1.1.1(2)**, and shall extend to a depth of 10 feet (3048 mm) below the outside finished ground level, or to the level of the floor, whichever is less

Date Submitted	3/3/2011	**Section**	502.2.3	**Proponent**	T Stafford
Chapter	5	**Affects HVHZ**	No	**Attachments**	No

TAC Recommendation Pending Review
Commission Action Pending Review

Comments

General Comments No **Alternate Language** No

Related Modifications

EN4744

Summary of Modification

There is no Table 502.1.1.1, reference should be to the 2 new tables 502.1.1.1 (1) and 502.1.1.1(2).

Rationale

Correct typographical error in section format. If Mod EN4744 is approved the change is not needed. The proposed code change will have no impact on small business.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact

Impact to building and property owners relative to cost of compliance with code

No impact

Impact to industry relative to the cost of compliance with code

No impact

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Not applicable. Corrects a conflict within the updated code.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Not applicable. Corrects a conflict within the updated code.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

Not applicable. Corrects a conflict within the updated code.

Does not degrade the effectiveness of the code

Not applicable. Corrects a conflict within the updated code.

502.2.3 Floors.

502.2.3.1 Shell buildings, renovations and alterations.

502.2.3.1.1 Floors over outdoor air or unconditioned space. The minimum thermal resistance (*R*-value) of the insulating material installed either between the floor framing or continuously on the floor assembly shall be as specified in ~~Table 502.1.1.1~~ **Tables 502.1.1.1(1) or Table 502.1.1.1(2)**, based on construction materials used in the floor assembly.

502.2.3.1.2 Slabs on grade. The minimum thermal resistance (*R*-value) of the insulation around the perimeter of heated slab-on-grade floors shall be R-7.5 for 12 inches belowthe top of the slab or to the top of the footing, whichever is less, or downward to at least the bottom of the slab and then horizontally to the interior or exterior for the total distance

Date Submitted	3/3/2011	**Section**	502.2.4	**Proponent**	T Stafford
Chapter	5	**Affects HVHZ**	No	**Attachments**	No

TAC Recommendation Pending Review
Commission Action Pending Review

Comments

General Comments No **Alternate Language** No

Related Modifications

EN4744

Summary of Modification

There is no Table 502.1.1.1, reference should be to the 2 new tables 502.1.1.1 (1) and 502.1.1.1(2).

Rationale

Correct typographical error in section format. If Mod EN4744 is approved the change is not needed. The proposed code change will have no impact on small business.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact

Impact to building and property owners relative to cost of compliance with code

No impact

Impact to industry relative to the cost of compliance with code

No impact

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Add identification of code volume to be consistent with Florida Code.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Add identification of code volume to be consistent with Florida Code.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

Add identification of code volume to be consistent with Florida Code.

Does not degrade the effectiveness of the code

Add identification of code volume to be consistent with Florida Code.

502.2.4 Doors.

502.2.4.1 Shell buildings, renovations and alterations.

502.2.4.1 Opaque doors. Opaque doors (doors having less than 50 percent glass area) shall meet the applicable requirements for doors as specified in ~~Table 502.1.1.1~~ **Tables 502.1.1.1(1) or Table 502.1.1.1(2)**

Date Submitted	3/3/2011	**Section**	502.2.5	**Proponent**	T Stafford
Chapter	5	**Affects HVHZ**	No	**Attachments**	No

TAC Recommendation Pending Review
Commission Action Pending Review

Comments

General Comments No **Alternate Language** No

Related Modifications

EN4744

Summary of Modification

There is no Table 502.1.1.1, reference should be to the 2 new tables 502.1.1.1 (1) and 502.1.1.1(2).

Rationale

Correct typographical error in section format. If Mod EN4744 is approved the change is not needed. The proposed code change will have no impact on small business.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact

Impact to building and property owners relative to cost of compliance with code

No impact

Impact to industry relative to the cost of compliance with code

No impact

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Add identification of code volume to be consistent with Florida Code.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Add identification of code volume to be consistent with Florida Code.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

Add identification of code volume to be consistent with Florida Code.

Does not degrade the effectiveness of the code

Add identification of code volume to be consistent with Florida Code.

502.2.5 Fenestration (Prescriptive).

502.2.5.1 Shell buildings, renovations and alterations. Fenestration shall comply with ~~Table 502.1.1.1~~ **Tables 502.1.1.1(1) or Table 502.1.1.1(2)**.

502.2.5.1.1 Maximum area. The vertical fenestration area (not including opaque doors) shall not exceed the percentage of the gross wall area specified in ~~Table 502.1.1.1~~ **Tables 502.1.1.1(1) or Table 502.1.1.1(2)**. The skylight area shall not exceed 3 percent of the gross roof area.

502.2.5.1.2 Maximum *U*-factor and SHGC. For vertical fenestration, the maximum *U*-factor and solar heat gain coefficient (SHGC) shall be as specified in ~~Table 502.1.1.1~~ **Tables 502.1.1.1(1) or Table 502.1.1.1(2)**, based on the window projection factor. For skylights, the maximum *U*-factor and solar heat gain coefficient (SHGC) shall be as specified in ~~Table 502.1.1.1~~ **Tables 502.1.1.1(1) or Table 502.1.1.1(2)**. The window projection factor shall be determined in accordance with Equation 5-1.

$PF = A/B$ **(Equation 5-1)**

where:

PF = Projection factor (decimal).

A = Distance measured horizontally from the furthest continuous extremity of any overhang, eave, or permanently attached shading device to the vertical surface of the glazing.

B = Distance measured vertically from the bottom of the glazing to the underside of the overhang, eave, or permanently attached shading device.

Where different windows or glass doors have different *PF* values, they shall each be evaluated separately, or an area-weighted *PF* value shall be calculated and used for all windows and glass doors.

Date Submitted	3/15/2011	**Section**	503.2.3	**Proponent**	Ann Stanton
Chapter	5	**Affects HVHZ**	No	**Attachments**	No

TAC Recommendation Pending Review
Commission Action Pending Review

Comments

General Comments No **Alternate Language** No

Related Modifications

Summary of Modification

Update Tables 503.2.3(1) and (2) to change IPLV requirements to IEER resquirement contained in addenda s to ASHRAE 90.1-2007.

Rationale

Update code to include revised national standards. Tables 503.2.3(1) and (2) are revised to reflect new equipment efficiencies effective 1/1/10 that are contained in addenda s to ASHRAE 90.1-2007. ASHRAE changed the descriptor for part-load efficiencies to an IEER; it is anticipated that the US DOE will expect states to certify to ASHRAE 90.1-2007 within 2 years; designers will expect to utilize this measure of equipment efficiency. There is no impact expected on small business due to this change.
Conflict in code: condensing unit efficiency requirements are removed from Table 503.2.3(1)because of duplication in Table 503.2.3(6).

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

Code officials will have to get used to a new descriptor for HVAC systems.

Impact to building and property owners relative to cost of compliance with code

None.

Impact to industry relative to the cost of compliance with code

Will allow designers to use current efficiency ratings instead of outdated ones.

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Yes, updates to current national standards.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Yes, updates to current national standards.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

No.

Does not degrade the effectiveness of the code

No.

TABLE 503.2.3(1)

UNITARY AIR CONDITIONERS AND CONDENSING UNITS,

ELECTRICALLY OPERATED,

MINIMUM EFFICIENCY REQUIREMENTS

Equipment Type	Size Category	Sub-Category or Rating Condition	Minimum Efficiency[b]	Test Procedure[a]
Air Conditioners, Air Cooled	<65,000 Btu/h[d]	Split System	13.0 SEER	AHRI 210/240
		Single Package	13.0 SEER	
	=65,000 Btu/h and <135,000 Btu/h	Split System and Single Package	11.2 EER[c] 11.4 IEER[c]	
	=135,000 Btu/h and <240,000 Btu/h	Split System and Single Package	11.0 EER[c] 11.2 IEER[c]	AHRI 340/360
	=240,000 Btu/h and <760,000 Btu/h	Split System and Single Package	10.0 EER[c], 10.1 IEER[c] ~~9.7 IPLV[e]~~	
	=760,000 Btu/h	Split System and Single Package	9.7 EER[c], 9.8 IEER[c] ~~9.4 IPLV[e]~~	
Through-the Wall, Air-cooled	=30,000 Btu/h[d]	Split System	12.0 SEER	AHRI 210/240
		Single Package	12.0 SEER	
Space constrained products, air conditioners		Split system	12.0 SEER[e]	

	<65,000 Btu/h[c]	or Single Package		
Air Conditioners, Water and Evaporatively Cooled	<65,000 Btu/h	Split System and Single Package	12.1 EER 12.3 IEER	
	=65,000 Btu/h and <135,000 Btu/h	Split System and Single Package	11.5 EER[c] 11.7 IEER[c]	AHRI 210/240
	=135,000 Btu/h and <240,000 Btu/h	Split System and Single Package	11.0 EER[c] 11.2 IEER[c]	
	=240,000 Btu/h	Split System and Single Package	11.05 EER[c] 11.1 IEER[c]	AHRI 340/360
~~Condensing Units, Air Cooled~~	~~=135,000 Btu/h~~		~~10.1 EER,~~ ~~11.2 IPLV~~	~~AHRI 365~~
~~Condensing Units, Water or Evaporatively Cooled~~	~~=135,000 Btu/h~~		~~13.1 EER,~~ ~~13.1 IPLV~~	

For SI: 1 British thermal unit per hour = 0.2931 W.

[a] Chapter 6 contains a complete specification of the reference test procedure, including the referenced year version of the test procedure.

[b] IPLVs and part load rating conditions are only applicable to equipment with capacity modulation.

[c] Deduct 0.2 from the required EERs and IEERs ~~IPLVs~~ for units with a heating section other than electric resistance heat.

[d]Single-phase, air-cooled air-conditioners <65,000 Btu/h are regulated by NAECA. SEER values are those set by NAECA.

[e]As granted by U.S. Department of Energy letter of exception, specific to individual companies, SDHV products without a letter of exception shall have the same efficiency as air-cooled air-conditioners.

TABLE 503.2.3(2)

UNITARY AND APPLIED ~~AIR CONDITIONERS~~ HEAT PUMPS, ~~AND CONDENSING UNITS,~~ ELECTRICALLY OPERATED,

MINIMUM EFFICIENCY REQUIREMENTS

quipment Type	Size Category	Sub-Category or Rating Condition	Minimum Efficiency[b]	Test Procedure[a]
Air Cooled (Cooling mode)	<65,000 Btu/h[d]	Split System	13.0 SEER	AHRI 210/240
		Single Package	13.0 SEER	
	=65,000 Btu/h and <135,000 Btu/h	Split System and Single Package	11.0 EER[c] 11.2 IEER[c]	
	=135,000 Btu/h and <240,000 Btu/h	Split System and Single Package	10.6 EER[c] 10.7 IEER[c]	AHRI 340/360
	=240,000 Btu/h	Split System and Single Package	9.5 EER[c], 9.6 IEER[c] ~~9.2 IPLV~~[e]	
Through-the Wall, Air-cooled cooling mode	<30,000 Btu/h[d]	Split System	12.0 SEER	AHRI 210/240
		Single Package	12.0 SEER	

Space constrained products, heat pumps, cooling mode	<65,000 Btu/h[c]	Split system or Single Package	12.0 SEER[e]	
Space constrained products, heat pumps, heating mode	<65,000 Btu/h	Split system or Single Package	7.4 HSPF	
Air Water Source (Cooling Mode)	<17,000 Btu/h	86°F entering water	11.2 EER	AHRI/ASHRAE 13256-1
	=17,000 Btu/h and <135,000 Btu/h	86°F entering water	12.0 EER	
Groundwater Source (cooling mode)	<135,000 Btu/h	59°F entering water	16.2 EER	
Ground source (Cooling mode)	<135,000 Btu/h	77°F entering water	13.4 EER	
Air cooled (Heating mode)	*<65,000 Btu/h[d]* *(Cooling capacity)*	*Split system*	*7.7 HSPF*	*AHRI 210/240*
		Single package	*7.7 HSPF*	
	=65,000 Btu/h and *< 135,000 Btu/h* *(Cooling capacity)*	*47°F db/43°F wb Outdoor air*	*3.3 COP*	
	=135,000 Btu/h *(Cooling capacity)*	*47°F db/43°F wb Outdoor air*	*3.2 COP*	*AHRI 340/360*
Through the wall *(Air cooled, heating mode)*	*<30,000 Btu/h*	*Split system*	*7.4 HSPF*	*AHRI 210/240*
		Single package	*7.4 HSPF*	
Water source *(Heating mode)*	*<135,000 Btu/h* *(Cooling capacity)*	*68°F entering water*	*4.2 COP*	*AHRI/ASHRAE 13256-1*
Groundwater source *(Heating mode)*	*<135,000 Btu/h* *(Cooling capacity)*	*50°F entering water*	*3.6 COP*	*AHRI/ASHRAE 13256-1*
Ground source *(Heating mode)*	*<135,000 Btu/h* *(Cooling capacity)*	*32°F entering water*	*3.1 COP*	*AHRI/ASHRAE 13256-1*

For SI: °C – [(°F) – 32]/1.8 British thermal unit per hour – 0.2931 W. db = dry-bulb temperature, °F wb = wet-bulb temperature, °F

[a] Chapter 6 contains a complete specification of the reference test procedure, including the referenced year version of the test procedure.

[b] IPLVs and part load rating conditions are only applicable to equipment with capacity modulation.

[c] Deduct 0.2 from the required EERs and IEERs ~~IPLVs~~ for units with a heating section other than electric resistance heat.

[d] Single-phase, air-cooled air-conditioners <65,000 Btu/h are regulated by NAECA. SEER values are those set by NAECA.

[e] As granted by U.S. Department of Energy letter of exception, specific to individual companies, SDHV products without a letter of exception shall have the same efficiency as air-cooled air-conditioners.

Chapter 2, Definitions

Integrated Energy Efficiency Ratio (IEER): *a single-number figure of merit expressing cooling part-load EER efficiency for commercial unitary air-conditioning and heat pump equipment on the basis of weighted operation at various load capacities for the equipment.*

Date Submitted	3/15/2011	**Section**	503.2.3	**Proponent**	Ann Stanton
Chapter	5	**Affects HVHZ**	No	**Attachments**	No

TAC Recommendation Pending Review
Commission Action Pending Review

Comments

General Comments No **Alternate Language** No

Related Modifications

Withdraw 4762 in favor of this mod.

Summary of Modification

Delete Florida-specific Tables 503.2.3(7), 503.2.3(8) and 503.2.3(9) and replace with new Table 503.2.3(7). Fix Table 503.2.3(10) to be consistent with addenda l of ASHRAE 90.1-2007. Add a referenced CTI standard to Chapter 6.

Rationale

Changes to federal law: This action is necessary to update Florida's code to the 1/1/10 national standard for water chilling package equipment and update to addenda l of ASHRAE 90.1-2007 in order to be current as required by federal law.
Unintended results from integration of previously adopted FL-specifics with model code: Florida specific criteria constituted the previous national standard and were not intended to replace the more recent national standards for water chilling package equipment. Florida needs to line up with the national standard. There should be no impact on small business from this mod.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None. Updates to national standard.

Impact to building and property owners relative to cost of compliance with code

None. Updates to national standard.

Impact to industry relative to the cost of compliance with code

Makes code consistent with national standard.

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Yes, makes code consistent with national standard.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Yes, makes consistent with national standard.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

No.

Does not degrade the effectiveness of the code

No.

503.2.3 HVAC equipment performance requirements. Equipment shall meet the minimum efficiency requirements of Tables 503.2.3(1), 503.2.3(2), 503.2.3(3), 503.2.3(4), 503.2.3(5), 503.2.3(6), ~~and~~ 503.2.3(7), and 503.2.3(8) ~~and 503.2.3(9)~~ when tested and rated in accordance with the applicable test procedure. The efficiency shall be verified through certification under an *approved* certification program or, if no certification program exists, the equipment efficiency ratings shall be supported by data furnished by the manufacturer. Where multiple rating conditions or performance requirements are provided, the equipment shall satisfy all stated requirements. Where components, such as indoor or outdoor coils, from different manufacturers are used, calculations and supporting data shall be furnished by the designer that demonstrates that the combined efficiency of the specified components meets the requirements herein.

Exception: Water-cooled centrifugal water-chilling packages listed in Table 503.2.3(7) not designed for operation at AHRI Standard 550/590 test conditions of 44°F (7°C) leaving chilled water temperature and 85°F (29°C) entering condenser water temperature with 3 gpm/ton (0.054 I/s.kW) condenser water flow shall have maximum full load and NPLV ratings adjusted using the following equations:

Adjusted maximum full load kW/ton rating = [full load kW/ton from Table 503.2.3(7)]/K_{adj}

Adjusted maximum NPLV rating = [IPLV from Table 503.2.3(7)]/K_{adj}

where:

K_{adj} = 6.174722 - 0.303668(X) + 0.00629466(X)2 - 0.000045780(X)3

$X = DT_{std}$ + LIFT

DT_{std} = {24+[full load kW/ton from Table 503.2.3(7)] × 6.83}/Flow

Flow = Condenser water flow (GPM)/Cooling Full Load Capacity (tons)

LIFT = CEWT – CLWT (°F)

CEWT = Full Load Condenser Entering Water Temperature (°F)

CLWT = Full Load Leaving Chilled Water Temperature (°F)

The adjusted full load and NPLV values are only applicable over the following full-load design ranges:

Minimum Leaving Chilled Water Temperature: 38°F (3.3°C)

Maximum Condenser Entering Water Temperature: 102°F (38.9°C)

Condensing Water Flow: 1 to 6 gpm/ton 0.018 to 0.1076 1/s . kW) and X =39 and =60

Delete Table 503.2.3(7) in its entirety.

~~**TABLE 503.2.3(7)**~~

~~**MINIMUM EFFICIENCIES FOR CENTRIFUGAL CHILLERS <150 TONS[1]**~~

~~COP_{std} = 5.00; $IPLV_{std}$ = 5.25~~

Delete Table 503.2.3(8) in its entirety.

~~TABLE 503.2.3(8)~~

~~MINIMUM EFFICIENCIES FOR CENTRIFUGAL CHILLERS >150 TONS, <300 TONS[1]~~

~~COP_{std} = 5.55; $IPLV_{std}$ = 5.90~~

Delete Table 503.2.3(9) in its entirety.

~~TABLE 503.2.3(9)~~

~~MINIMUM EFFICIENCIES FOR CENTRIFUGAL CHILLERS > 300 TONS[1]~~

~~COP_{std} = 6.10; $IPLV_{std}$ = 6.40~~

-

TABLE 503.2.3(7)

WATER CHILLING PACKAGES, EFFICIENCY REQUIREMENTS[a]

Equipment Type	Size Category	Units	Path A		Path B		Test Procedure
			Full Load	IPLV	Full Load	IPLV	AHRI
Air-cooled chillers	< 150 tons	EER	= 9.562	= 12.500	NA[d]	NA[d]	550/590
	= 150 tons	EER	= 9.562	= 12.750	NA[d]	NA[d]	
Air cooled without condenser, electrical operated	All capacities	EER	Air-cooled chillers without condensers must be rated with matching condensers and comply with the air-cooled chiller efficiency requirements				
Water cooled, electrically operated, reciprocating	All capacities	kW/ton	Reciprocating units must comply with water cooled positive displacement efficiency requirements.				
Water cooled,	< 75 tons	kW/ton	= 0.780	= 0.630	= 0.800	= 0.600	
	= 75 tons and < < 150	kW/ton	= 0.775	= 0.615	= 0.790	= 0.586	

electrically operated, positive displacement	tons = 150 tons and < 300 tons	kW/ton	= 0.680	= 0.580	= 0.718	= 0.540	
	= 300 tons	kW/ton	= 0.620	= 0.540	= 0.639	= 0.490	
Water cooled, electrically operated, centrifugal	< 300 tons	kW/ton	= 0.634	= 0.596	= 0.639	= 0.450	
	= 300 tons and < 600 tons	kW/ton	= 0.576	= 0.549	= 0.600	= 0.400	
	= 600 tons	kW/ton	= 0.570	= 0.539	= 0.590	= 0.400	
Air cooled, absorption single effect	All capacities	COP	= 0.600	NR[e]	NA[d]	NA[d]	AHRI 560
Water-cooled, absorption single effect	All capacities	COP	= 0.700	NR[e]	NA[d]	NA[d]	
Absorption double effect, indirect-fired	All capacities	COP	= 1.000	= 1.050	NA[d]	NA[d]	
Absorption double effect, direct-fired	All capacities	COP	= 1.000	= 1.000	NA[d]	NA[d]	

For SI: 1 British thermal unit per hour = 0.2931 W.

a. The chiller equipment requirements do not apply for chillers used in low-temperature applications where the design leaving fluid temperature is < 40°F.

b. Section 12 contains a complete specification of the referenced test procedure, including the referenced year version of the test procedure.

c. Compliance with this standard can be obtained by meeting the minimum requirements of Path A or B. However, both the full load and IPLV must be met to fulfill the requirements of Path A or B.

d. NA means that this requirement is not applicable and cannot be used for compliance.

e. NR means that there are no minimum requirements for this category.

TABLE 503.2.3(8~~10~~)

Performance Requirements for Heat Rejection Equipment

Equipment Type	Total System Heat Rejection Capacity at Rated Conditions	Sub-Category or Rating Condition	Performance Required[1,2,3]	Test Procedure[3,4]
Propeller or Axial Fan Open-Circuit Cooling Towers	All	95°F Entering Water	=38.2 gpm/hp	CTI ATC-105

		85°F Leaving Water 75°F Entering wb~~Outdoor Air~~		and CTI STD-201
Centrifugal Fan Open-Circuit Cooling Towers	All	95°F Entering Water 85°F Leaving Water 75°F Entering wb~~Outdoor Air~~	=20.0 gpm/hp	CTI ATC-105 and CTI STD-201
Propeller or Axial Fan Closed-Circuit Cooling Towers	All	102°F Entering Water 90°F Leaving Water 75°F Entering wb	=14.0 gpm/hp	CTI ATC-105S and CTI STD-201
Centrifugal Closed-Circuit Cooling Towers	All	102°F Entering Water 90°F Leaving Water 75°F Entering wb	=7.0 gpm/hp	CTI ATC-105S and CTI STD-201
Air Cooled Condensers	All	125°F Condensing Temperature R-22 Test Fluid 190°F Entering Gas Temperature 15°F Subcooling 95°F Entering db	=176,000 Btu/h-hp	AHRI 460

[1] For purposes of this table, open-circuit cooling tower performance is defined as the water ~~maximum~~ flow rating of the tower at the thermal rating condition listed in Table 503.2.3 (8) divided by the fan ~~nameplate rated~~ motor nameplate power.

[2]For the purposes of this table, closed-circuit cooling tower performance is defined as the process water flow rating of the tower at the thermal rating condition listed in Table 505.2.3(8) divided by the sum of the fan motor nameplate power and the integral spray pump motor nameplate power.

[3~~2~~]For purposes of this table, air-cooled condenser performance is defined as the heat rejected from the refrigerant divided by the fan ~~nameplate rated~~ motor nameplate power.

[4 ~~3~~]Chapter 6 contains a complete specification of the referenced test procedure, including the referenced year version of the test procedure.

[5] The efficiencies and test procedures for both open- and closed-circuit cooling towers listed in Table 503.2.3(8) are not applicable to hybrid cooling towers that contain a combination of separate wet and dry heat exchange sections.

Chapter 6

CTI

Cooling Technology Tower Institute

2611 FM 1960 West, Suite H-200

Houston, TX 77068-3730.

Standard referenced number	Title	Reference in code section number
CTI ATC-105-~~(~~00~~)2000~~	Acceptance Test Code for Water Cooling Towers	Table 503.2.3(8 ~~10~~)
CTI ATC-105S-96	Acckeptance Test Code for Closed Circuit Cooling Towers	Table 503.2.3(8)
CTI Std. 201-04 ~~2002~~	Certification Standard for Water Cooling Tower Thermal Performance	Table 503.2.3(8 ~~10~~)

Date Submitted	3/16/2011	**Section**	503.2.3	**Proponent**	Ann Stanton
Chapter	5	**Affects HVHZ**	No	**Attachments**	No

TAC Recommendation Pending Review
Commission Action Pending Review

Comments

General Comments No **Alternate Language** No

Related Modifications

Summary of Modification

Update Table 503.2.3(3) to ASHRAE 90.1-07 addenda t to specify that the term "Replacements" means "Nonstandard size" equipment to be installed in an existing opening of less than 16" high and 42" wide.

Rationale

Update to national standard that specifies that "replacement" equipment means nonstandard size equipment meeting certain conditions. This limits the scope of which equipment the lesser efficiency applies to. No impact is anticipated to small business because of this mod.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact is anticipated due to this mod.

Impact to building and property owners relative to cost of compliance with code

No impact is anticipated due to this mod.

Impact to industry relative to the cost of compliance with code

No impact is anticipated due to this mod.

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Yes, it limits the scope of the standard.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Yes, it limits the scope of the standard.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

No.

Does not degrade the effectiveness of the code

No.

TABLE 503.2.3(3)

PACKAGED TERMINAL AIR CONDITIONERS AND PACKAGED TERMINAL HEAT PUMPS,

SINGLE PACKAGED VERTICAL AIR CONDITIONERS AND HEAT PUMPS, ROOM AIR CONDITIONERS, AND ROOM AIR CONDITIONER HEAT PUMPS

MINIMUM EFFICIENCY REQUIREMENTS

EQUIPMENT TYPE	SIZE CATEGORY (INPUT)	SUBCATEGORY OR RATING CONDITION	MINIMUM EFFICIENCY[b]	TEST PROCEDURE[a]
PTAC (Cooling mode) Standard size ~~New construction~~	All capacities	95°F db outdoor air	12.5 – (0.213 x Cap/1000) EER	AHRI 310/380
PTAC (Cooling mode) Nonstandard size ~~Replacements~~[c]	All capacities	=95°F db outdoor air	10.9 – (0.213 x Cap/1000) EER	
PTHP (Cooling mode) Standard size ~~New construction~~	All capacities	95°F db outdoor air	12.3 – (0.213 x Cap/1000) EER	
PTHP (Cooling mode) Nonstandard size ~~Replacements~~[c]	All capacities	95°F db outdoor air	10.8 – (0.213 x Cap/1000) EER	
PTHP (Heating mode) Standard size ~~New construction~~	All capacities	---	3.2 – (0.026 x Cap/1000) COP	
PTHP (Heating mode) Nonstandard size ~~Replacements~~[c]	All capacities	---	2.9 – (0.026 x Cap/1000) COP	
SPVAC (Cooling mode)	<65000 Btu/h =65000<135000 Btu/h =135000<240000 Btu/h	95°F db/75°F wb Outdoor Air	9.0 EER 8.9 EER 8.6 EER	AHRI 390
SPVHP (Cooling mode)	<65000 Btu/h =65000<135000	95°F db/75°F wb Outdoor Air	9.0 EER	

	Btu/h =135000<240000 Btu/h		8.9 EER 8.6 EER	
SPVHP (Heating mode)	<65000 Btu/h =65000<135000 Btu/h =135000<240000 Btu/h	47°F db/43°F wb Outdoor Air	3.0 COP 3.0 COP 2.9 COP	
Room air conditioners with louvered sides	<6000 Btu/h =6000<8000 Btu/h =8000<14000 Btu/h =14000<20000 Btu/h =20000 Btu/h		9.7 EER 9.7 EER 9.8 EER 9.7 EER 8.5 EER	ANSI/AHAM RAC-1
Room air conditioners without louvered sides	<8000 Btu/h =8000<20000 Btu/h		9.0 EER 8.5 EER	
Room air conditioner heat pumps with louvered sides	<20000 =20000 Btu/h		9.0 EER 8.5 EER	
Room air conditioner heat pumps without louvered sides	<14000 =14000 Btu/h		8.5 EER 8.0 EER	
Room air conditioner, casement only	All capacities		8.7 EER	
Room air conditioner, casement-Slider	All capacities		9.5 EER	

For SI: °C – [(°F) – 32]/1.8 British thermal unit per hour – 0.2931 W. db = dry-bulb temperature, °F wb = wet-bulb temperature, °F

[a] Chapter 6 contains a complete specification of the reference test procedure, including the referenced year version of the test procedure.

[b] Cap means the rated cooling capacity of the product in Btu/h. If the unit's capacity is less than 7,000 Btu/h, use 7,000 Btu/h in the calculation. If the unit's capacity is greater than 15,000 Btu/h, use 15,000 Btu/h in the calculation.

[c] Nonstandard size ~~Replacements~~ units must be factory labeled as follow: "MANUFACTURED FOR NONSTANDARD SIZE ~~REPLACEMENT~~ APPLICATIONS ONLY: NOT TO BE INSTALLED IN NEW CONSTRUCTION PROJECTS." Nonstandard size ~~Replacements~~ efficiencies apply only to units being installed in ~~with~~ existing sleeves having an external wall opening of less than 16 inches (406 mm) high or ~~and~~ less than ~~5~~42 inches (1067 mm) wide and having a cross-sectional area less than 670 in^2.

Date Submitted	3/16/2011	**Section**	503.2.3	**Proponent**	Ann Stanton
Chapter	5	**Affects HVHZ**	No	**Attachments**	No

TAC Recommendation Pending Review
Commission Action Pending Review

Comments

General Comments No **Alternate Language** No

Related Modifications

Summary of Modification

Modify Table 503.2.3(4), Warm Air Furnaces..., to specify the correct part of standards referenced.

Rationale

Update to national standards per addenda k to ASHRAE 90.1-07. The addenda specifies which part of the referenced standard should be tested to, thus avoiding potential conflicts for the equipment tested. No impact is anticipated on small business because of this mod.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact on code enforcement.

Impact to building and property owners relative to cost of compliance with code

No impact on property owners.

Impact to industry relative to the cost of compliance with code

No impact on industry.

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Yes, consistent with national standard.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Yes, consistent with national standard.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

No.

Does not degrade the effectiveness of the code

No.

TABLE 503.2.3(4)

WARM AIR FURNACES AND COMBINATION WARM AIR FURNACES/

AIR-CONDITIONING UNITS,

WARM AIR DUCT FURNACES AND UNIT HEATERS

Minimum Efficiency Requirements

Equipment Type	Size Category	Subcategory or Rating Condition	Minimum Efficiency[d,e]	Test Procedure[a]
Warm Air Furnace, Gas-Fired	<225,000 Btu/h	---	78% AFUE or 80% E_t[c]	DOE 10 CFR, Part 430 or Section 2.39, Thermal Efficiency, of ANSI Z 21.47
	=225,000 Btu/h	Maximum Capacity[c]	80% E_c[f]	Section 2.39, Thermal Efficiency, of ANSI Z21.47
Warm Air Furnace, Oil-Fired	<225,000 Btu/h	---	78% AFUE or 80% E_t[c]	DOE 10 CFR, Part 430 or Section 42, Combustion, of UL 727
	=225,000 Btu/h	Maximum Capacity[b]	81% E_t[g]	Section 42, Combustion, of UL 727
Warm Air Duct Furnaces, Gas-Fired	All Capacities	Maximum Capacity[b]	80% E_c	Section 2.10, Efficiency, of ANSI Z83.8
Warm Air Unit Heaters, Gas-Fired	All Capacities	Maximum Capacity[b]	80% E_c	Section 2.10, Efficiency, of ANSI Z83.8
Warm Air Unit Heaters, Oil-Fired	All Capacities	Maximum Capacity[b]	80% E_c	Section 40, Combustion, of UL 731

[No change to footnotes]

Date Submitted	3/8/2011	**Section**	503.4.3.3.2	**Proponent**	Ann Stanton
Chapter	5	**Affects HVHZ**	No	**Attachments**	No

TAC Recommendation Pending Review
Commission Action Pending Review

Comments

General Comments No **Alternate Language** No

Related Modifications

4762

Summary of Modification

Section is amended to reference Table 503.2.3(8). It should not have been reserved.

Rationale

Resolve conflict in code where Table 503.2.3(8) [was 13-407.AB.3.2.1G from the 2007 FBC-Building] was inserted into the code but not referencd. No impact is expected on small business due to this fix.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

Reference will assist in enforcement of the code.

Impact to building and property owners relative to cost of compliance with code

None, references code table.

Impact to industry relative to the cost of compliance with code

None, references code table.

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Yes, references code table.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Yes.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

No.

Does not degrade the effectiveness of the code

No.

503.4.3.3.2 Heat rejection. ~~Reserved.~~ Heat rejection equipment shall comply with Table 503.2.3(8). ~~Sections 503.4.3.3.2.1 and 503.4.3.3.2.2.~~

Exception: Where it can be demonstrated that a heat pump system will be required to reject heat throughout the year.

~~**503.4.3.3.2.1 Climate Zones 3 and 4.**~~

~~**503.4.3.3.2.2 Climate Zones 5 through 8.**~~

Date Submitted	3/16/2011	**Section**	504.2	**Proponent**	Ann Stanton
Chapter	5	**Affects HVHZ**	No	**Attachments**	No

TAC Recommendation Pending Review
Commission Action Pending Review

Comments

General Comments No **Alternate Language** No

Related Modifications

4790

Summary of Modification

Update Table 504.2 to national standards for water heating equipment in addenda k to ASHRAE 90.1-07 and to the minimum efficiency of gas and oil-fired pool heaters noticed by the US Dept of Energy in the Federal Register, Vol. 75, Friday, April 16, 2010.

Rationale

Update to national standards for water heating equipment from ASHRAE 90.1-07 and the US Dept of Energy notice in the Federal Register, Vol. 75, Friday, April 16, 2010. No impact is anticipated to small business from this mod.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None, update to new national standards.

Impact to building and property owners relative to cost of compliance with code

None, update to new national standards.

Impact to industry relative to the cost of compliance with code

None, update to new national standards.

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Yes, update to new national standards.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Yes, update to new national standards.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

No

Does not degrade the effectiveness of the code

No

TABLE 504.2

Minimum Performance of Water-Heating Equipment

Equipment Type	Size Category (input)	Subcategory or Rating Condition	Performance Required[1,2]	Test Procedure
Electric table top water heaters	= 12kW	Resistance = 20 gal	0.93 – 0.00132V EF	DOE 10 CFR Part 430
Water heaters, Electric	= 12kW	Resistance	0.97-0.00132V, EF	DOE 10 CRF Part 430[3]
	>12 kW	Resistance	1.73V + 155 SL, Btu/h	Section G.2 of ANSI Z21.10.3
	=24 Amps & = 250Volts	Heat Pump	0.93-0.00132V, EF	DOE 10 CFR Part 430[3]
Storage water heaters, Gas	= 75,000 Btu/h	= 20 gal	0.67-0.0019V, EF	DOE 10 CFR Part 430[3]
	>75,000 Btu/h ~~and = 155,000 Btu/h~~	<4,000 (Btu/h)/gal	80% E_t (Q/800+110/V) SL, Btu/h	Section G.1 and G.2 of ANSI Z21.10.3
	~~>155,000 Btu/h~~	~~<4,000 (Btu/h)/gal~~	~~80% E_t (Q/800+110/V) SL, Btu/h~~	
Instantaneous water heaters, gas	>50,000 Btu/h and <200,000 Btu/h[4]	=4,000 (Btu/h)/gal and < 2 gal	0.62-0.0019V, EF	DOE 10 CFR Part 430
	=200,000 Btu/h	=4,000 (Btu/h)/gal and <10 gal	80% E_t	Section G.1 and G.2 of ANSI Z21.10.3
	=200,000 Btu/h	>4,000 (Btu/h)/gal and =10 gal	80% E_t (Q/800+110/V) SL, Btu/h	
Storage water heaters, Oil	= 105,000 Btu/h	= 20 gal	0.59-0.0019V, EF	DOE 10 CFR Part 430[3]
	>105,000 Btu/h	< 4,000 (Btu/h)/gal	78% E_t (Q/800+100/V) SL,Btu/h	Section G.1 and G.2 of ANSI Z21.10.3
Instantaneous water heaters, Oil	= 210,000 Btu/h	=4,000 (Btu/h)/gal and <2 gal	0.59-0.0019V, EF	DOE 10 CFR Part 430
	>210,000 Btu/h	=4,000 (Btu/h)/gal and <10 gal	80% E_t	Section G.1 and G.2 of ANSI Z21.10.3
	>210,000 Btu/h	=4,000 (Btu/h)/gal and =10 gal	78% E_t (Q/800+110/V) SL, Btu/h	
Hot water supply boilers, Gas and Oil	=300,000 Btu/h and <12,500,000 Btu/h	=4,000 (Btu/h)/gal and <10 gal	80% E_t	Section G.1 and G.2 of ANSI Z21.10.3
Hot water supply boilers, Gas	=300,000 Btu/h and <12,500,000 Btu/h	=4000 (Btu/h)/gal and =10 Gal	80% E_t	

			(Q/800+110/V) SL, Btu/h	
Hot Water Supply Boilers, Oil	=300,000 Btu/h and <12,500,000 Btu/h	>4000 (Btu/h)/gal and >10 Gal	78% E_t (Q/800+110/V) SL, Btu/h	
Pool heaters, Gas and Oil	All	--	78% E_t before 4/16/2013 82% E_t after 4/16/2013	ASHRAE 146
Heat pump pool heaters	All	---	4.0 COP At low air temperature	AHRI 1160[d]
Unfired storage tanks	All		Minimum insulation requirement R-12.5 (h.ft2·°F)/Btu	(none)

For SI: 1 Btu/h=.2931W, °C=[(°F) – 32]/1.8

a Energy factor (ER) and thermal efficiency (E_t) are minimum requirements. In the EF equation, V is the rated volume in gallons.

b. Standby loss (SL) is maximum Btu/h based on a 70°F temperature difference between stored water and ambient requirements. In the SL equation, Q is the nameplate input rate in Btu/h.

In the SL equation for electric water heaters, V is the rated volume in gallons. In the SL equation for oil and gas water heaters and boilers, V is the rated volume in gallons.

c Instantaneous water heaters with input rates below 200,000 Btu/h must comply with these requirements if the water heater is designed to heat water to temperatures 180°F or higher.

d Test reports from independent laboratories are required to verify procedure compliance.

Date Submitted	3/3/2011	**Section**	506.4	**Proponent**	T Stafford
Chapter	5	**Affects HVHZ**	No	**Attachments**	No

TAC Recommendation Pending Review
Commission Action Pending Review

Comments

General Comments No **Alternate Language** No

Related Modifications

Summary of Modification

Remove reference to EnergyGauge Summit Fla/Com computer program.

Rationale

Remove reference to EnergyGauge Summit Fla/Com computer program. The proposed code change will have no impact on small business.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact

Impact to building and property owners relative to cost of compliance with code

No impact

Impact to industry relative to the cost of compliance with code

No impact

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Add identification of code volume to be consistent with Florida Code.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Add identification of code volume to be consistent with Florida Code.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

Add identification of code volume to be consistent with Florida Code.

Does not degrade the effectiveness of the code

Add identification of code volume to be consistent with Florida Code.

506.4 Documentation. The ~~EnergyGauge Summit Fla/Com~~ Commission approved compliance software tools shall be utilized to conform to the provisions of this section. Compliance software provisions and overall stringency shall be as described in Normative Appendix B.

Date Submitted	3/3/2011	**Section**	Table 506.6.2	**Proponent**	T Stafford
Chapter	5	**Affects HVHZ**	No	**Attachments**	No

TAC Recommendation Pending Review
Commission Action Pending Review

Comments

General Comments No **Alternate Language** No

Related Modifications

Summary of Modification

Delete table as it is applicable to the prescriptive method which was deleted.

Rationale

This table is applicable to the prescriptive method which was deleted from the code and it is no longer needed. . The proposed code change will have no impact on small business.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact

Impact to building and property owners relative to cost of compliance with code

No impact

Impact to industry relative to the cost of compliance with code

No I,mpact

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Not applicable. Corrects a conflict within the updated code.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Not applicable. Corrects a conflict within the updated code.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

Not applicable. Corrects a conflict within the updated code.

Does not degrade the effectiveness of the code

Not applicable. Corrects a conflict within the updated code.

~~**TABLE 505.6.2**~~

~~**LIGHTING POWER DENSITIES FOR BUILDING EXTERIORS**~~

~~**Applications**~~	~~**Lighting Power Densities**~~
~~Tradable Surfaces (Lighting Power Densities for uncovered parking areas, building grounds, building entrances and exits, canopies and overhangs, and outdoor sales areas may be traded.)~~	
~~Uncovered Parking Areas~~	
~~Parking lots and drives~~	~~0.15 W/ft^2~~
~~Building Grounds~~	
~~Walkways less than 10 feet wide~~	~~1.0 watts per linear foot~~
~~Walkways 10 feet wide or greater, plaza areas, and special feature areas~~	~~0.2 W/ft^2~~
~~Stairways~~	~~1.0 W/ft^2~~
~~Building Entrances and Exits~~	
~~Main entries~~	~~30 watts per linear foot of door width~~
~~Other doors~~	~~20 watts per linear foot of door width~~
~~Canopies and Overhangs~~	
~~Canopies (freestanding and attached and overhangs)~~	~~1.25 W/ft^2~~
~~Outdoor Sales~~	
~~Open areas (including vehicle sales lots)~~	~~0.5 W/ft^2~~
~~Street frontage for vehicle sales lots in addition to "open area" allowance~~	~~20 watts per linear foot~~
~~Non-Tradable Surfaces (Lighting Power Density calculations for the following applications can be used only for the specific application and cannot be traded between surfaces or with other exterior lighting. The following allowances are in addition to any allowance otherwise permitted in the "Tradable Surfaces" section of this table.)~~	
~~Building facades~~	~~0.2 W/ft^2 for each illuminated wall or surface or 5.0 watts per linear foot for each illuminated wall or surface length~~
~~Automated teller machines and night depositories~~	~~270 watts per location plus 90 watts per additional ATM per location~~
~~Entrances and gatehouse inspection stations at guarded facilities~~	~~1.25 W/ft^2 of uncovered area (covered areas are included in the "Canopies and Overhangs" section of "Tradable Surfaces")~~
~~Loading areas for law enforcement, fire, ambulance, and other emergency service vehicles~~	~~0.5 W/ft^2 of uncovered area (covered areas are included in the Canopies and Overhangs" section of "Tradable Surfaces")~~
~~Drive-up windows at fast food restaurants~~	~~400 watts per drive-through~~
~~Parking near 24-hour retail entrances~~	~~800 watts per main entry~~

Date Submitted	3/8/2011	**Section**	FSEC	**Proponent**	Ann Stanton
Chapter	6	**Affects HVHZ**	No	**Attachments**	No

TAC Recommendation Pending Review
Commission Action Pending Review

Comments

General Comments No **Alternate Language** No

Related Modifications

many

Summary of Modification

References to EnergyGauge USA and EnergyGauge Summit computer programs were removed from the code during the 2010 code development process. This mod removes them from Chapter 6.

Rationale

Conflict in code; the 2010 code change process removed reference to these programs from the code. No impact on small business is anticipated due to this correction.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None due to this correction.

Impact to building and property owners relative to cost of compliance with code

None due to this correction.

Impact to industry relative to the cost of compliance with code

None due to this correction.

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Yes.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Yes.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

No.

Does not degrade the effectiveness of the code

No.

FSEC

Florida Solar Energy Center

1679 Clearlake Road

Cocoa, FL 32922-5703

Standard referenced number	Title	Reference in code section number
FSEC-RR-54-00 October 11, 2000,	"The HERS Rating Method and the Derivation of the Normalized Modified Loads Method", Fairey, P., J. Tait, D. Goldstein, D. Tracey, M. Holtz, and R. Judkoff . Available online at: http://www2.fsec.ucf.edu/en/publications/html/FSEC-RR-54-00/index.htm	Appendix B: B-1.1.3,
~~2010~~	~~EnergyGauge USA Fla/Res~~	~~103.2.1.2, 405.4.1, Appendix B B-1.2~~
~~2010~~	~~EnergyGauge Summit Fla/Com~~	~~103.2.2.2, 506.4, Appendix B B-2.3, Table B-2.2~~

Date Submitted	3/3/2011	**Section**	B-1.1.3	**Proponent**	T Stafford
Chapter	8	**Affects HVHZ**	No	**Attachments**	No

TAC Recommendation Pending Review
Commission Action Pending Review

Comments

General Comments No **Alternate Language** No

Related Modifications

Summary of Modification

Remove reference to EnergyGaugeUSA Fla/Res computer program.

Rationale

Remove reference to EnergyGaugeUSA Fla/Res computer program. The proposed code change will have no impact on small business.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact

Impact to building and property owners relative to cost of compliance with code

No impact

Impact to industry relative to the cost of compliance with code

No impact

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Add identification of code volume to be consistent with Florida Code.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Add identification of code volume to be consistent with Florida Code.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

Add identification of code volume to be consistent with Florida Code.

Does not degrade the effectiveness of the code

Add identification of code volume to be consistent with Florida Code.

B-1.1.3 Equipment calculation of End Use Energy Loads for Code Compliance Determination. The energy loads for heating, cooling and hot water in the *Proposed Design* home shall be normalized to account for the differences in improvement potential that exist across equipment types using the following formula in accordance with the paper "The HERS Rating Method and the Derivation of the Normalized Modified Loads Method," Research Report No. FSEC-RR-54-00, Florida Solar Energy Center.

nMEUL = REUL * (nEC_x /EC_r) where:

nMEUL = normalized Modified End Use Loads (for heating, cooling or hot water) as computed using ~~EnergyGauge USA Fla/Res~~ Commission approved compliance software.

REUL = *Standard Reference Design* Home End Use Loads (for heating, cooling or hot water) as computed using ~~EnergyGauge USA Fla/Res~~ Commission approved compliance software.

EC_r = estimated Energy Consumption for the *Standard Reference Design* Home's end uses (for heating, including auxiliary electric consumption, cooling or hot water) as computed using ~~EnergyGauge USA Fla/Res~~ Commission approved compliance software.

and where: **nEC_x = (a* EEC_x – b)*(EC_x * EC_r * DSE_r) / (EEC_x * REUL)** where:

nEC_x = normalized Energy Consumption for *Proposed Design*'s end uses (for heating, including auxiliary electric consumption, cooling or hot water) as computed using ~~EnergyGauge USA Fla/Res~~ Commission approved compliance software.

EC_r = estimated Energy Consumption for *Standard Reference Design* home's end uses (for heating, including auxiliary electric consumption, cooling or hot water) as computed using ~~EnergyGauge USA Fla/Res~~ Commission approved compliance software.

EC_x = estimated Energy Consumption for the *Proposed Design* home's end uses (for heating, including auxiliary electric consumption, cooling or hot water) as computed using ~~EnergyGauge USA Fla/Res~~ Commission approved compliance software.

EEC_x = Equipment Efficiency Coefficient for the *Standard Reference Design* home's equipment, such that

EEC_x equals the energy consumption per unit load in like units as the load, and as derived from the Manufacturer's Equipment Performance Rating (MEPR) such that

EEC_x equals 1.0 / MEPR for AFUE, COP or EF ratings, or such that EEC_x equals 3.413 / MEPR for HSPF, EER or SEER ratings.

DSE_r = REUL/EC_r * EEC_r

For simplified system performance methods, DSE_r equals 0.80 for heating and cooling systems. However, for detailed modeling of heating and cooling systems, DSE_r may be less than 0.80 as a result of part load performance degradation, coil air flow degradation, improper system charge and auxiliary resistance heating for heat pumps. Except as otherwise provided by these Standards, where detailed systems modeling is employed, it must be applied equally to both the *Standard Reference Design* and the *Proposed Design* homes.

EEC_r = Equipment Efficiency Coefficient for the *Standard Reference Design* home's equipment, such that EEC_r equals the energy consumption per unit load in like units as the load, and as derived from the Manufacturer's Equipment Performance Rating (MEPR) such that EEC_r equals 1.0 / MEPR for AFUE, COP or EF ratings, or such that EEC_r equals 3.413 / MEPR for HSPF, EER or SEER ratings.

REUL = *Standard Reference Design* home End Use Loads (for heating or cooling) as computed using ~~EnergyGauge USA Fla/Res~~.

Date Submitted	3/3/2011	**Section**	Table B-2.2	**Proponent**	T Stafford
Chapter	8	**Affects HVHZ**	No	**Attachments**	No

TAC Recommendation Pending Review
Commission Action Pending Review

Comments

General Comments No **Alternate Language** No

Related Modifications

Summary of Modification

Remove reference to EnergyGauge Summit Fla/Com computer program in table and footnote.

Rationale

Remove reference to EnergyGauge Summit Fla/Com computer program in table and footnote. The proposed code change will have no impact on small business.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact

Impact to building and property owners relative to cost of compliance with code

No impact

Impact to industry relative to the cost of compliance with code

No impact

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Not applicable. Corrects a conflict within the updated code.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Not applicable. Corrects a conflict within the updated code.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

Not applicable. Corrects a conflict within the updated code.

Does not degrade the effectiveness of the code

Not applicable. Corrects a conflict within the updated code.

PARTIAL TABLE B-2.2 shown:

Table B-2.2

SPECIFICATIONS FOR THE STANDARD REFERENCE AND PROPOSED DESIGNS

BUILDING COMPONENT/ CHARACTERISTICS	**STANDARD REFERENCE DESIGN**	**PROPOSED DESIGN**
Building envelope	*In 3 locations make the following change:* ~~EnergyGauge Summit Fla/Com~~ Commission approved compliance software	No change
Miscellaneous loads	*In 1 location make the following change:* ~~EnergyGauge Summit Fla/Com~~ Commission approved compliance software	No change

[1] Specifications utilized in the ~~EnergyGauge Summit Fla/Com~~ Commission approved computer program are those specified by Chapter 11 of ASHRAE Standard 90.1-2004.

Date Submitted	3/18/2011	**Section**	EPL Display Card	**Proponent**	Ann Stanton
Chapter	9	**Affects HVHZ**	No	**Attachments**	No

TAC Recommendation Pending Review
Commission Action Pending Review

Comments

General Comments No **Alternate Language** No

Related Modifications

Summary of Modification

Remove reference to EnergyGauge USA FLA/RES computer program from the form.

Rationale

Conflict with revised code. References to the EnergyGauge USA Fla/Res computer program have been deleted from the code. The Building Energy Rating System (BERS) still exists and is administered from the Energy Gauge office. A score of 100 will no longer even meet code. The Florida Dept. of Community Affairs is being dissolved. The impact of this change on small business is not known.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None.

Impact to building and property owners relative to cost of compliance with code

None anticipated.

Impact to industry relative to the cost of compliance with code

Impact on indistry is not known.

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Yes, code consistency.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Yes, code consistency.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

No.

Does not degrade the effectiveness of the code

No.

ENERGY PERFORMANCE LEVEL (EPL) DISPLAY CARD

[No change to form except the Note as shown:]

*NOTE: ~~The home's estimated Energy Performance Index is available through the EnergyGauge USA FLA/RES computer program.~~ This is not a Building Energy Rating. If your index is below 70 ~~100~~ your home may qualify for energy efficiency mortgage (EEM) incentives if you obtain a Florida Building Energy~~Gauge~~ Rating. Contact the EnergyGauge Hotline at (321) 638-1492 or see the EnergyGauge web site at www.energygauge.com for information and a list of certified Raters. For information about Florida's Energy Efficiency Code ~~For Building~~Construction, contact the Florida Building Commission's support staff ~~Department of Community Affairs~~ at (850) 487-1824.

Date Submitted	3/10/2011	**Section**	Form 402	**Proponent**	Ann Stanton
Chapter	9	**Affects HVHZ**	No	**Attachments**	No

TAC Recommendation Pending Review
Commission Action Pending Review

Comments

General Comments No **Alternate Language** No

Related Modifications

4790, 4646

Summary of Modification

Change scoping to delete site-added components of manufactured homes and reference to FlaResCheck (does not exist at this point). Fix reference to table numbers. Add 2013 gas pool heater revised efficiency.

Rationale

Conflict with code and update of federal standard. Reference to site-added components of manufactured homes and a program called FlaResCheck do not exist in the code and should be deleted. The federal standard for gas-fired pool heaters is revised effective 4/16/13, which is before the next code will become effective; it should be revised on the form. There is no impact to small business from fixing this form, other than to avoid confusion.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

Help avoid confusion.

Impact to building and property owners relative to cost of compliance with code

None.

Impact to industry relative to the cost of compliance with code

Help to avoid confusion.

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Yes, avoid confusion.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Yes.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

No.

Does not degrade the effectiveness of the code

No.

Florida Building Code, Energy Conservation

Residential Building Thermal Envelope Approach

FORM 402-2010 *All climate zones*

Scope: Compliance with Section 402 of the Florida Building Code, Energy Conservation, shall be demonstrated by the use of Form 402 for single- and multiple-family residences of three stories or less in height, additions to existing residential buildings, renovations to existing residential buildings, new heating, cooling, and water heating systems in existing buildings, ~~and site-added components of manufactured homes and manufactured buildings~~, as applicable. To comply, a building must meet or exceed all of the energy efficiency requirements on Table 402A and all applicable mandatory requirements summarized in Table 402B of this form. If a building does not comply with this method or Alternate Form 402, ~~the printout from FlaResCheck~~, it may still comply under Section 405 of the Florida Building Code, Energy Conservation.

[No other changes to page 1]

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(5) For all conventional units with capacities greater than 30,000 Btu/hr. For other types of equipment, see Tables 503.2.3(1-8 ~~10~~).

Exception: Electric resistance heat prohibition does not apply to additions, renovations, and new heating systems installed in existing buildings.

TABLE 402B		MANDATORY REQUIREMENTS
Component	**Section**	**Summary of Requirement(s)**
Swimming pools & spas	403.9	Spas and heated pools must have vapor-retardant covers or a liquid cover or other means proven to reduce heat loss except if 70% of heat from site-recovered energy. Off/timer switch required. Gas heaters minimum thermal efficiency=78% (82% after4/16/13). Heat pump pool heaters minimum COP= 4.0.

[No other changes to page 2]

Date Submitted	3/18/2011	**Section**	FL Standards 1 and 2	**Proponent**	Jennifer Hatfield
Chapter	10	**Affects HVHZ**	No	**Attachments**	No

TAC Recommendation Pending Review
Commission Action Pending Review

Comments

General Comments No **Alternate Language** No

Related Modifications

4863, 4869

Summary of Modification

Removes FL Standards and replaces with national consensus standards. Provides reference to these standards in Chapter 6.

Rationale

This proposed code change falls within the glitch criteria stated. It removes FL Standards and replaces with national consensus standards needed to follow state law that requires energy efficiencies for pools and spas. The national consensus standards follow what was addressed in the FL Standards. Small business will not be affected by this modification.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None

Impact to building and property owners relative to cost of compliance with code

None

Impact to industry relative to the cost of compliance with code

None

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Not applicable, addressing a standard update.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Improves the code by providing the national consensus standards and removing language that was adopted while waiting on the approval of such standards. Consistent with legislative directive to adopt energy efficient requirements for pools and spas.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

It does not.

Does not degrade the effectiveness of the code

No, rather the proposal improves the effectiveness of the code by providing the national consensus standards and removing language that was adopted while waiting on the approval of such standards. Consistent with legislative directive to adopt energy efficient requirements for pools and spas.

CHAPTER 6

REFERENCED STANDARDS

Add the following NEW reference:

APSP

Association of Pool & Spa Professionals

2211 Eisenhower Ave

Alexandria, VA 22314

Standard referenced number	Title	Reference in code section number
ANSI/APSP-14—11	Portable Electric Spa Energy Efficiency Standard	403.9
ANSI/APSP-15—11	Residential Swimming Pool and Spa Energy Efficiency Standard	403.9

Delete the following Florida Standards found in Appendix D:

~~**FLORIDA STANDARD NO. 12(FL-12)**~~

~~**FLORIDA REGULATORY REQUIREMENTS FOR ENERGY EFFICIENCY FOR RESIDENTIAL INGROUND SWIMMING POOLS & SPAS**~~

~~The following regulatory requirements shall constitute Florida Standard FL-**12** and will provide compliance criteria for section 403.9 of the *Florida Building Code, Energy Conservation Code*. These requirements follow an Association of Pool & Spa Professional (APSP) a draft national standard for energy efficiency for residential in-ground swimming pools and spas.~~

~~**SECTION 1**~~

~~**SCOPE**~~

~~1.1. Energy efficiency requirement for permanently installed residential aboveground/onground and inground swimming pool filtration and permanently installed swimming pool and spa heating systems used for bathing and are operated by an owner. This standard is intended to cover certain aspects of the swimming pool filtration and heating system design, equipment, installation, and operation for the purpose of consuming less energy while maintaining water quality and temperature.~~

1.2. This standard does not cover swimming pool safety requirements, including, but not limited to, suction entrapment, structural, thermal, or electrical hazards.

1.3. This standard does not cover Portable Electric Spas, which are covered by FL-2, APSP-14 Standard for Portable Electric Spa Energy Efficiency.

1.4 This standard provides specifications for energy efficient filtration systems, but does not specify sanitizer, daily turnover flow rates, or pool-cleaning technologies needed to establish and maintain swimming pool water quality.

1.5 1.2. This standard provides specifications for energy efficient, permanently installed residential aboveground/onground and inground swimming pool and spa heating systems.

1.6 1.5. Other standards are referenced in this standard for items not covered.

SECTION 2

NORMATIVE REFERENCES

AHRI 1160, *Standard For Performance Rating of Heat Pump Pool Heaters*

APSP-4, *Standard For Aboveground/Onground Residential Swimming Pools.* ***[1]***

APSP-5, *Standard For Residential Inground Swimming Pools.*[‡]

APSP-7, *Standard for Suction Entrapment Avoidance in Swimming Pools, Wading Pools, Spas, Hot Tubs, and Catch Basins.*[‡]

HI 1.6, *Centrifugal Pump Test.* ***[2]***

IEEE 114-2001, *Standard Test Procedure for Single-Phase Induction Motors.* ***[3]***

NFPA 70, *National electrical code*, *Article 680, Swimming pools, fountains, and similar installations.*[4]

NSF 50, *Equipment for Swimming Pools, Spas, Hot Tubs and Other Recreational Water Facilities.*[5]

SECTION 3

~~DEFINITIONS~~

~~Auxiliary Pool Loads. Features, functions, or devices that need higher head and flow rates than that required for pool filtration, including, but not limited to, solar pool heating systems, filter backwashing, pool cleaners, waterfalls, fountains, and spas.~~

~~Backwash Valve. A diverter valve designed to reverse the flow of water through a filter. The valve is located between the circulation pump and the filter, including, but not limited to, slide, push-pull, multi-port, and full-flow valves.~~

~~Brake Horsepower. A term historically used in the pool, spa, and whirlpool bath industries, a term which conflicts with Total Horsepower and Service Factor Horsepower, and if used would not conform to this standard.~~

~~Capacity of the Motor. The Total Horsepower, or product of the rated horsepower and the service factor of a motor used on a pool pump (also known as SFHP) based on the maximum continuous duty motor power output rating allowable for nameplate ambient rating and motor insulation class.~~

~~Elbow (fittings). Also called ell, el. a plumbing pipe or pipe connection having a right-angled bend.~~

~~Energy Factor. The measure of overall pool filter pump efficiency in units of gallons per watt-hour, as determined using the applicable test method in Section 4.1.2. Energy Factor is analogous to other energy factors such as Miles Per Gallon. Energy Factor (EF) is calculated as:~~

~~EF (gal/Wh) = Flow (gpm) x 60 / Power (watts)~~

~~Filtration Flow Rate. A flow rate that will turn over the pool water volume in six hours or more (must be equal to or less than the maximum filtration flow rate).~~

~~Flow Rate. Flow rate is the volume of water flowing through the filtration system in a given time, usually measured in gallons per minute (gpm).~~

~~Full-Rated. A term used to describe pool pump motors with a Service Factor greater than 1.25 (typically). The term is generally used for marketing purposes and is not used within the scope this standard.~~

Head. The water pressure necessary to move fluid through pipes and inlets, push water through filters,and heaters, and other equipment and project it through fountains and jets.

Maximum Filtration Flow Rate. The flow rate needed to turn over the pool water volume in six hours or 36 gpm, whichever is greater.

Maximum Flow Rate. The flow rate for the auxiliary pool loads or the filtration flow rate, whichever is greater.

Max-Rated. A term used to describe pool pump motors with a Service Factor between 1.0 and 1.25 (typically). The term is generally used for marketing purposes and is not within the scope this standard.

Multi-Speed. A pump motor capable of operating at two (2) or more speeds and includes two-speed, three-speed and variable-speed pumps.

Nameplate Horsepower. The nameplate power is the motor horsepower listed on the pumpnameplate and the horsepower by which a pump is typically sold (also known as rated horsepower).

NSF/ANSI 50 is the NSF International (formerly National Sanitation Foundation) Standard and American National Standards Institute document entitled "Circulation System Components and Related Materials for Swimming Pools, Spas/Hot Tubs"

Peak Horsepower. A term historically used in the pool, spa, and whirlpool bath industries, a term which conflicts with Total Horsepower and Service Factor Horsepower, and if used would not conform to this standard.

Permanently Installed Swimming Pool. A pool constructed in such a manner that it cannot be disassembled for storage.

Pipe and Pipe Fittings. The PVC pipe and fittings intended for use in the transport of swimming pool filtration water. Fittings include elbows, tees, and flow control valves. Pipe and fittings do not include backwash valves, which are addressed separately, and equipment connections, or internal equipment piping.

Pool Pump Motor Capacity. See Total Horsepower.

Pumps. Pool and spa pumps usually come with a leaf strainer before the impeller. The pumps contain an impeller to accelerate the water through the housing. The motors for residential pumps are included in the pump purchase but can be replaced separately. The pumps increase the “head” and “flow” of the water.

Rated Horsepower. The motor power output designed by the manufacturer for a rated RPM, voltage and frequency. May be less than Total Horsepower where the Service Factor is > 1.0, or equal to Total Horsepower where the Service Factor = 1.0

Residential Swimming Pools. Permanently installed residential inground and aboveground/onground swimming pools intended for use by a single-family home for noncommercial purposes and with dimensions as defined in ANSI/NSPI-5, Standard for Residential Inground Swimming Pools and ANSI/APSP-4 Standard for Aboveground/Onground Residential Swimming Pools.

Return. The return refers to the water in the filtration system returning to the pool. The return lines or return side, relative to the pump, can also be defined as the pressure lines or the pressure side of the pump. Water in the returns is delivered back to the pool at the pool inlets.

Service Factor. A multiplier applied to rated horsepower of a motor to indicate the percent above nameplate horsepower at which a pump motor may operate continuously without exceeding its allowable insulation class temperature limit, provided the other design parameters such a rated voltage, frequency and ambient temperature are within limits. Full-rated pool motor service factors can be as high as 1.65. A 1.5 hp pump with a 1.65 service factor produces 2.475 hp (total horsepower) at the maximum service factor point.

Service Factor Horsepower (SFHP). The maximum continuous duty motor power output rating allowable for nameplate ambient rating and motor insulation class. Commonly, service factor horsepower = rated horsepower x service factor (also known as total horsepower).

Special Horsepower. A term historically used in the pool, spa, and whirlpool bath industries, a term which may conflict with Rated Horsepower, Total Horsepower and Service Factor Horsepower, and if used would not conform to this standard.

Suction. Suction created by the pump is how the pool water gets from the skimmers and suction outlets to the filtration system. The suction side and suction lines refer to the vacuum side of the pump. It is at negative atmospheric pressure relative to the pool surface.

System Curve. A graphical representation of the relationship between Flow Rate and Total Dynamic Head, where TDH increases proportional to the square of the flow and plotting the relationship results in a parabolic shape. Each system will have a unique curve with the starting point, (zero flow) being the same for all systems. The generic expression for a system curve is $H = C \times F^2$, where H = Total Dynamic Head, C = is a coefficient based on the resistance of the system, and F = flow rate. As TDH increases, for example, as the filter collects debris and system pressure increases, coefficient C will also increase.

Sweep Elbow. Sweep elbows orare a type of elbow that has a pressure drop less than the pressure drop of straight pipe with a length of 30 pipe diameters. For example, a 2 inch elbow must have a pressure drop less than a 5-foot length of 2 inch straight pipe.

Total Dynamic Head. Total dynamic head, or TDH, refers to the sum of all the friction losses and pressure drops in the filtration system from the pool's suction outlets and skimmers to the returns. It is a measure of the system's total pressure drop and is given in units of either psi or feet of water column (sometimes referred to as "feet", or "feet of head" or "head").

Total Horsepower. The product of the rated horsepower nameplate power and the service factor of a motor used on a pool pump(also known as SFHP) based on the maximum continuous duty motor power output rating allowable for nameplate ambient rating and motor insulation class.

Total Horsepower = Rated Horsepower x Service Factor.

Turnover. A turnover is the act of filtering one volume of water in the pool.

Turnover Time (also called Turnover Rate). The time required to circulate the entire volume of water in the pool or spa through the filter. e.g. A turnover time of 6-hours means an entire volume of water equal to that of the pool will be passed through a filter system in six hours.

Turnover Time = Volume of the pool / Flow rate

Up-Rated. A term used to describe pool pump motors with a Service Factor between 1.0 and 1.25 (typically). The term is generally used for marketing purposes and is not within the scope this standard.

SECTION 4

APPLIANCES

4.1 Pool filter pumps

4.1.1 Motors

4.1.1.1 Motor efficiency
Pool filter pump motors shall not be split-phase, shaded-pole, or capacitor start – induction run type.

EXCEPTION: Pool pump motors that are powered exclusively from on-site renewable generation. For example: solar photovoltaic and wind generation. Grid-tied generation systems are not exempt since the pump is powered from the traditional utility grid when the alternate power source is not available.

4.1.1.2 Two-speed, multi-speed, or variable-speed capability
Pool filter pump motors with a capacity of 1.0 total horsepower or greater shall have the capability of operating at two or more speeds with a low speed having a rotation rate that is no more than one-half of the motor's maximum rotation rate.

4.1.1.3 Test methods for pool filter pump motors

4.1.1.3.1 Reported motor efficiency shall be verifiable by test method IEEE 114-2001 (corrected), or most recent version.

NOTE- Section 5.2.4.2.1 of IEEE 114-2001 lists formula for dynamometer correction factor. Formula inadvertently omits a component of the equation. Section 5.2.1.3.2 of the 1982 version of the standard lists formula correctly. Therefore, "corrected" shall mean using the 1982 version of the formula within the 2001 standard

4.1.2 Pumps

4.1.2.1 Test methods for pool pumps
4.1.2.1.1 ANSI/HI 1.6-2000 shall be used for the measurement of pump performance and efficiency.

4.1.2.1.2 4.1.2.1.1 Tests shall be conducted using unmodified, manufactured and fully assembled pump, including strainer baskets when applicable.

4.1.2.1.3 4.1.2.1.2 Three system curves shall be calculated:

Curve A: $H = 0.0167 \times F^2$ (approximately Curve 2.0" pipe)
Curve B: $H = 0.050 \times F^2$ (approximately Curve 1.5" pipe)
Curve C: $H = 0.0082 \times F^2$ (approximately Curve 2.5" pipe)

Where:
H is the total system head in feet of water.
F is the flow rate in gallons per minute (gpm).

4.1.2.1.4. 4.1.2.1.3 For each curve (A, B, and or C), the pump head shall be adjusted until the flow and head lie on the curve. The following shall be tested and reported for the intersect point of the pump performance curve with each system curve.:

1. Motor nominal speed (RPM)

2. Flow (gallons per minute)

3. Power (watts)

4. Energy Factor (gallons per watt hour)

Where the Energy Factor (EF) is calculated as:

EF = Flow (gpm) x 60 / Power (watts)

4.1.2.1.5 4.1.2.1.4 . For two-speed, three-speed, or other multi-speed pumps with fixed, non-adjustable speeds, test and report the intersect point of the pump performance curve with each system curve. Intersect data required in Section 4.1.2.1.4 shall be reported for each at both high and low speeds and each system curve s.

4.1.2.1.6 For variable-speed pumps, test and reportthe intersect point of the pump performance curve with each system curve. Intersect data required in Section 4.1.2.1.4 shall be reported for the highest, lowest, and the best efficiency speedsas determined by the manufacturer.

4.1.3 Labeling

4.1.3.1 Motors
Each pool filter pump motor shall be marked, permanently and legibly on an accessible and conspicuous place on the unit, in characters no less than ¼", the capacityTotal Horsepower of the motor.

4.1.3.2 Pumps
Each pool filter pump shall be marked, permanently and legibly on an accessible and conspicuous place on the unit, in characters no less than ¼", the Nnameplate Hhorsepower of the pump.

4.1.3.3 Two-speed, multi-speed, or variable-speed pool filter pumps shall be marked permanently and legibly on an accessible and conspicuous place on the unit, in characters no less than ¼", "This pump, when used as a filter pump, must be installed with a two-, multi-, or variable-speed pump motor controller."

EXCEPTION: Pool filter pumps with integrated and/or included timer and motor control without which the motor will not run and which comply with Section 4.2.1.

4.2 Pump controllers

4.2.1 Pool pump motor controls for use with a two-speed, multi-speed, or variable-speed pumps shall have the capability of operating the pool pump at least at two speeds. The control's default filtration speed setting shall be no more than one-half of the motor's maximum rotation rate. Any high-speed override capability shall be for a temporary period not to exceed one 24-hour cycle without resetting to default settings.

4.3 Heaters

4.3.1 Energy design

4.3.1.1 Gas-fired pool heaters shall not be equipped with constant burning pilots.

4.3.1.2 All pool heaters shall have a readily accessible on-off switch that is mounted on the outside of the heater and that allows shutting off the heater without adjusting the thermostat setting.

4.3.1.3 Electric resistance hearing is prohibited.

4.3.2 Heater efficiency

4.3.2.1 Gas-fired pool heaters and oil-fired pool heaters shall have a thermal efficiency of not less than 78 percent for heaters manufactured before April 16, 2013 and not less than 82 percent for heaters manufactured on or after April 16, 2013.

4.3.2.2 There is no energy efficiency standard for electric resistance pool heaters.

4.3.2.3 Electric heat pump pool heaters shall have a coefficient of performance (COP) of not less than 4.0 at the low temperature conditions when tested in accordance with AHRI Standard 1160.

4.3.3 Test methods

4.3.3.1 ANSI Z21.56 – 1994 shall be used for the measurement of gas-fired and oil-fired pool heater efficiency.

4.3.3.2 ANSI/ASHRAE 146-1998 shall be used for the measurement of electric resistance pool heater efficiency.

4.3.3.3 AHRI 1160 - 2008, Table 2, Standard Rating Conditions – Low Air Temperature, shall be used for the measurement of heat pump pool heater efficiency.

AHRI 1160 – 2008: Table 2. Standard Rating Conditions

	Air Temperature Surrounding Unit		Water Temperature Entering Unit	Water Flow Rate (or Less if Specified by the Manufacturer)	
	Dry-bulb °F [°C]	Wet-bulb °F [°C]	°F [°C]	GPM	L/s
High Air Temperature -Mid Humidity (62% RH)	80.6 [27.0]	70.7 [21.5]	80.0 [26.7]	0.450 per 1000 Btu/h	0.028 per 293.1 Watts
Low Air Temperature	50.0 [10.0]	44.2 [6.78]	80.0 [26.7]	Same flow rate as established in	

Mid Humidity (63% RH)				High Air Temperature - Mid Humidity (62% RH)

To comply with this standard, measured test results for Heating Capacity and Coefficient of Performance shall not be less than 95% of Published Ratings

SECTION 5

POOL SYSTEMS

5.1 General

5.1.1 All filter pumps and filter pump motors installed shall be listed in the California Energy Commission's Appliance Efficiency Database for Residential Pool Pumps, or the APSP Appliance Efficiency Pool Pump Database and shall comply with Section 4.1.

5.1.2 For maximum energy efficiency, pool filtration should be operated at the lowest possible flow rate for a time period that provides sufficient water turnover for clarity and sanitation.

5.1.3 For maximum hydraulic efficiency, sweep elbows or elbow-type fittings that have a pressure drop of less than the pressure drop of straight pipe with a length of 30 pipe diameters are recommended.

5.1.4 Auxiliary pool loads that require high flow rates such as spas, pool cleaners, and water features, should be operated separately from the filtration system to allow the maximum filtration flow rate to be kept to a minimum.

5.1.5 Pool controls are a critical element of energy efficient pool design. Modern pool controls allow for auxiliary loads such as cleaning systems, solar heating, and temporary water features without compromising energy savings.

5.2 Maximum filtration flow rate

5.2.1 Depending on the size (volume) of the pool, the pool filtration flow rate may not be greater than the rate needed to turn over the pool water volume in six hours or 36 gpm, whichever is greater. This means that for pools of less than 13,000 gallons the pump must be sized to have a flow rate of 36 gpm or less and for pools of greater than 13,000 gallons, the pump must be sized using the following equation:

Maximum Filtration Flow Rate (gpm) = Pool Volume (gallons) / 360

5.2.2 These are maximum flow rates. Lower filtration flow rates and longer filtration times are encouraged and will result in added energy savings.

5.2.3 Pools with auxiliary pool loads must use either a multi-speed pump or a separate pump for each auxiliary pool load. For example, if a spa shares the pool filtration system, either a multi-speed pump must be used or a

separate pump must be provided to operate the spa. If the pool system can be served by one pump of less than 1.0 total horsepower in capacity, the pump may be single speed.

5.3 Pool filter pump sizing, flow rate, and filter pump control.

5.3.1 Filtration pump motors with a capacity of 1.0 total horsepower or more shall be multi-speed.

5.3.2. Select a pool filtration pump from the California Energy Commission's Appliance Efficiency Database for Residential Pool Pumps, or the APSP Appliance Efficiency Pool Pump Database.

5.3.2.1. For pools equal to or less than 17,000 gallons, a filter pump shall be chosen such that the flow rate listed for Curve A is less than the maximum filtration flow rate calculated according to Section 5.2.1 (six-hour turnover rate). For multi-speed and variable-speed filter pumps, at least one speed shall have the flow listed for Curve A that is less than the maximum filtration flow rate calculated according to Section 5.2.1 (six-hour turnover rate).

5.3.2.2 5.3.3 For pools greater than 17,000 gallons, a filter pump shall must be chosen such that the listed flow rate at Curve C is less than the maximum filtration flow rate calculated according to Section 5.2.1 (six-hour turnover rate). For multi-speed and variable-speed filter pumps, at least one speed shall have the flow listed for Curve C that is less than the maximum filtration flow rate calculated according to Section 5.2.1 (six-hour turnover rate).

5.3.3 5.3.2.. The maximum filter pump performance limits in Sections 5.3.2.1 and 5.3.2.2 are calculated based on pool gallons, where the filter pump performance increases proportional to the size of the pool. In the same way, pipe, filter and backwash valve (when used) will increase in size proportional to pool volume.

5.3.4. 5.3.3.1 System equation used by pool filter pump manufacturers: The pool filter pump head and flow rate shall be calculated using the following system equation:

$H = C \times F^2$

Where:

H is the total system head in feet of water.

F is the Maximum Filtration Flow Rate in gallons per minute (gpm) calculated according to Section 5.2.1 (six-hour turnover rate).

C is a coefficient based on the volume of the pool:

C = 0.0167 for pools less than or equal to 17,000 gallons.

C = 0.0082 for pools greater than 17,000 gallons.

and;

5.3.4 Filtration pumps shall be sized, or if programmable, shall be programmed, so that the filtration flow rate is not greater than the rate needed to turn over the pool water volume in 6 hours or 36 gpm, whichever is greater; and

5.3.5 Pump motors used for filtration with a capacity of 1 total horsepower or more shall be multi-speed; and

5.3.6 Each auxiliary pool load shall be served by either separate pumps or the system shall be served by a multi-speed pump; and

EXCEPTION: Filter pumps if less than 1 total horsepower may be single speed.

5.3.5 5.3.7 Multi-speed pumps must have controls that default to the filtration flow rate when no auxiliary pool loads are operating. The controls must also default to the filtration flow rate setting within 24 hours and must have a temporary override capability for servicing.

5.3.65.3.8 A time switch or similar control mechanism must be installed as part of the pool water filtration control system that will allow all pumps to be set or programmed to run only during the off-peak electric demand period and for the minimum time necessary to maintain the water in the condition required by applicable public health standards.

EXCEPTION: Pool filter pumps with integrated and/or included timer and motor control without which the motor will not run and which comply with Section 4.2.1.

5.4 System equipment

5.4.1 Filters sizing.
Filters shall be at least the size specified in NSF/ANSI 50 for public pool intended applications based on the maximum flow rate through the filter.

5.4.1.1 The filter factors that must be used are (in ft^2/gpm):

§ Cartridge 0.375 (gpm/ft^2)

§ Sand 15 (gpm/ft^2)

§ Diatomaceous Earth 2 (gpm/ft^2)

5.4.2 Backwash valves.
Minimum diameter of backwash valves shall be 2 inches or the diameter of the return pipe, whichever is greater.

5.5 System piping and circulation.

5.5.1 Pool piping and pipe fittings shall be sized so that the velocity of the water at the maximum flow rate does not exceed 8 feet per second in the return line and 6 feet per second in the suction line. Velocity calculations for branch piping flow shall allow variations in pipe sizes.

EXCEPTION: Equipment connections and internal piping, including, but not limited to, suction safety systems, pumps, heaters, and sanitizing devices.

5.5.1.1. Velocity calculations for branch piping flow shall allow variations in pipe sizes provided there are no valves capable of isolating flow through one branch. Branch piping is shown as the thin line in Figure 1.

Figure 1

5.5.2 5.5.1. For pool filtration pumps without an integrated strainer basket, a length of straight pipe that is at least 4 pipe diameters shall be installed before the pump.

5.5.3 5.5.2 Solar heating. At least 18 inches of horizontal or vertical pipe shall be installed between the filter and the heater or dedicated suction and return lines, or built-in or built-up connections shall be installed to allow for the future addition of solar heating equipment.

5.6 Directional inlets.

The pool shall have directional inlets that adequately mix the pool water.

[1] Association of Pool and Spa Professionals (APSP) [formerly National Spa and Pool Institute (NSPI)], 2111 Eisenhower Avenue, Alexandria, VA 22314

[2] Hydraulic Institute, 6 Campus Drive, First Floor North, Parsippany NJ, 07054-4406, (973) 267-9700, *www.pumps.org*

[3] IEEE Corporate Office, 3 dark Avenue, 17th Floor, New York, NY 10016-5997, (212) 419-7900, *www.ieee.org*

[4] National Fire Protection Association (NFPA) 1 Batterymarch Park, Quincy, MA 02169-7471, (617) 770-3000, *www.nfpa.org*

[5] NSF International, 789 Dixboro Road, Ann Arbor, MI 48113-0140, (734) 769-8010, *www.nsf.org*

[4072]

FLORIDA STANDARD NO. 2 3 (FL-2 3)

FLORIDA REGULATORY REQUIREMENTS FOR PORTABLE ELECTRIC SPA ENERGY EFFICIENCY

The following regulatory requirements shall constitute Florida Standard FL-**2 3** and provide compliance criteria for section 403.9.5 of the *Florida Building Code, Energy Conservation Code*. These requirements follow an Association of Pool & Spa Professional (APSP)a draft national standard for portable electric spa energy efficiency that is currently obtaining ANSI approval.

SECTION 1.

SCOPE

1.1 These requirements apply to factory built residential portable electric spas that are used for bathing and are operated by a private an owner.

1.2 This standard is meant to establish minimum energy efficiency requirements for portable electric spas. This standard shall be met notwithstanding certain variations in equipment, materials, and design (Refer to ANSI/NSPI-6).

1.3 These requirements do not apply to public spas, permanently installed residential spas or other spas, such as those operated for medical treatment, physical therapy or other purposes. Swim-spas and portions of combination spas/swim-spas are included in this standard.

1.4 Other standards are referenced in this standard for items not covered.

SECTION 2.

NORMATIVE REFERENCES

APSP-6 Standard for Portable Spas[1]

ISO/IEC 17025General Requirements for the Competence of Calibration and Testing Laboratories

ISO/IEC Guide 65 General Requirements for Bodies Operating Product Certification Systems

SECTION 3.

DEFINITIONS

AMBIENT TEMPERATURE – Air temperature inside testing chamber.

ANCILLARY EQUIPMENT – Additional components used in the construction of the spa beyond pumps, heaters and control systems.

CERTIFICATION BODY (CB) – An independent third party that operates a product, process or service certification system.

~~CHAMBER – A controlled environment suitable for conducting energy efficient testing Climate controlled test room.~~

~~COVER, SPECIFIED – The cover that is provided or specified by the spa manufacturer.~~

~~ENERGY EFFICIENCY STANDARD – A performance standard expressed in numerical form, such as energy factor, EER, or thermal efficiency. Using less energy to provide the same level of energy service.~~

~~FILL VOLUME - The halfway point between the bottom of the skimmer opening and the overflow level top of the spa. In the absence of a If there is no wall skimmer, the fill volume is six inches below the overflow level of the spa. the spa shall be filled with water to six inches below the top of the spa.~~

~~FILTER CYCLE - The period when the control system activates a pump intended to move water through a filter media.~~

~~GALLON – Means U.S. liquid gallon~~

~~HEATING CYCLE – The period when the temperature regulating system activates the heating component for the purpose of increasing the water temperature.~~

~~HOT TUB – See Spa~~

~~INGROUND SPA - Non-portable, non-self-contained spa (Refer to ANSI/NSPI -3 Permanent Inground Spas)~~

~~NORMALIZE – Calculation of power consumption to eliminate temperature bias.~~

~~NRTL – Nationally Recognized Test Laboratory~~

~~POWER FACTOR – The ratio of watts to volt-amperes of an AC circuit.~~

~~PURGE CYCLE - The period when the control system activates a pump intended to rapidly move water throughout the spa.~~

~~SKIMMER, VENTED – A suction opening intended to remove floating debris from the water surface and to be installed where part of the water intake opening is open to atmospheric pressure.~~

~~SPA – A product intended for the immersion of persons in heated water circulated in a closed system, and not intended to be drained and filled with each use. A spa usually includes a filter, a heater (electric, solar, or gas), a pump or pumps, and a control, and may also include other equipment, such as lights, blowers, and water sanitizing equipment.~~

~~Permanent Residential Spa- A spa in which the water heating and water circulating equipment is not an integral part of the product. The spa shall be intended as a permanent plumbing fixture and shall not be intended to be moved. (Refer to ANSI/NSPI-3 1999 Standard For Permanently Installed Residential Spas.)~~

~~Public Spa - Any spa other than a permanent residential spa or residential portable spa which is intended to be used for bathing and is operated by an owner, licensee, concessionaire, regardless of whether a fee is charged for use. (Refer to ANSI/NSPI-2 1999 Standard for Public Spas.)~~

~~Residential Portable Spa - Either Self-Contained or Non-Self-Contained (Refer to ANSI/NSPI-6 1999 Standard For Residential Portable Spas.):~~

Self Contained Spa - A factory built spa in which all control, water heating and water circulating equipment is an integral part of the product. Self-contained spas may be permanently wired or cord connected.

Non-Self-Contained Spa - A factory built spa in which the water heating and circulating equipment is not an integral part of the product. Non-self-contained spas may employ separate components such as an individual filter, pump, heater and controls, or they may employ assembled combinations of various components.

STANDARD COVER – The cover that is provided or specified by the spa manufacturer.

STANDBY MODE - All settings at default as shipped by the manufacturer, except water temperature which may be adjusted to meet the test conditions. No manual operations are enabled.

SWIMSPA – Variant of a Residential Portable Spa which consists of a large unobstructed volume of water primarily designed for, and constructed with specific equipment required to produce a water flow intended to allow recreational physical activity including, but not limited to, swimming in place.

Swim spas may include peripheral jetted seats intended for water therapy, heater, circulation and filtration system, or may be a separate distinct portion of a combination spa/swim spa with separate controls.

SWIM SPA - Variant of a factory built residential portable spa consistingwhich consists of a large unobstructed volume of water that allows the 99% male/femalepopulation to swim. The design and construction of a swim spa includes specific features and equipmentutilizing swim jets for a treadmill-like workout, primarily designed for, and constructed with specific equipment required to produce a water flow intended to allow recreational physical activity including, but not limited to, swimming in place.

Swim spas may include peripheral jetted seats intended for water therapy, heater, circulation and filtration system, or may be a separate distinct portion of a combination spa/swim spa and may have with separate controls.

WATT HOUR – Energy consumed over a period of one hour.

SECTION 4

QUALIFICATION OF TESTING LABORATORIES

AND CERTIFICATION BODIES

4.1 All Certification Bodies (CB) shall be accredited by a member of IAF (International Accreditation Forum) using ISO/IEC Guide 65, General Requirements for Bodies Operating Product Certification Systems.

4.2 All testing laboratories shall be qualified by a CB.

4.2.1 The CB shall assess the testing laboratory's quality system to determine that it satisfies applicable requirements of ISO/IEC 17025.

NOTE: Different parts of ISO/IEC 17025 are applicable to first-party, second-party and third-party laboratories.

4.2.2 Where a laboratory is accredited to ISO/IEC 17025 by a member of ILAC (International Laboratory Accreditation Council) the CB is permitted to accept such accreditation as evidence of conformity to ISO/IEC 17025, in whole or in part.

4.2.3 The CB shall additionally assess the laboratory's facilities, test equipment, testing personnel and test procedures, to establish that the laboratory is competent to perform the tests in this standard.

4.2.4 The CB shall provide a copy of the assessment report to the testing laboratory, and retain a record of the assessment. Any discrepancies identified in the assessment report shall be cleared before the laboratory is deemed qualified.

4.3 Testing laboratories shall demonstrate qualification on a continuing basis.

4.3.1 The CB shall audit the testing laboratory for ISO/IEC 17025 compliance and testing competence on a regular basis.

4.3.1.1 Laboratories accredited by an ILAC member shall be audited at intervals not exceeding three (3) years.

4.3.1.2 Non-accredited laboratories shall be audited annually by the CB.

4.3.2 The CB shall provide a copy of the audit report to the testing laboratory, and retain a record of the audit. Any discrepancies identified in the audit report shall be cleared before the laboratory is deemed re-qualified.

SECTION 54.

TEST METHOD

54.1 Purpose: To measure the energy consumption of a portable electric spa in standby mode, using a repeatable and reproducible test procedure. The results will be used to calculate the standby power demand.

5.2 The test facility and equipment will be audited as indicated in 4.3 of this standard to confirm they meet the requirements of this standard. Documentation showing facility and test equipment compliance to this standard from the CB will be maintained on side by the test facility and made available as required (See Appendix B).

5.3 All equipment shall be calibrated at intervals not to exceed eighteen months, and traceable to NIST or other national standard.

5.4 4.2 Test Equipment

Note: All equipment shall be calibrated and traceable to the National Institute of Standards and Technology (NIST). The test facility and equipment will be evaluated by a NRTL to confirm they meet the requirements of this standard. Documentation showing facility and test equipment compliance to this standard from the NRTL will be maintained on site by the test facility and made available as required.

5.4.1.4.2.1 Recording Watt Hour meter – Accuracy: Class-2 or better.

5.4.2.4.2.2 Temperature measurement system - Accuracy: +/- 1°F

5.4.3.4.2.3 Water meter to measure fill water in gallons – Accuracy: +/- 1.5%

5.5.4.3 **Test Conditions**

The test method for portable electric spas is as follows:

5.5.1.4.3.1 Minimum continuous testing time shall be 72 hours.

5.5.2.4.3.2 The spa shall be filled with water to the halfway point between the bottom of the skimmer opening and the top of the spa. In the absence of a If there is no wall skimmer, the fill volume is six inches below the overflow level spa shall be filled with water to six inches below the top of the spa.

5.5.2.1 4.3.2.1 Measure and record fill volume (V) while filling according to 4.3.2.

5.5.3.4.3.3 The water temperature of the spa or spa portion of a combination swim spa shall be a minimum of 100°F, for the duration of the test. The water temperature of the swim spa or swim portion of a combination swim spa shall be a minimum of 85°F, for the duration of the test.

5.5.4.4.3.4 The ambient air temperature shall be a maximum of 63°F for the duration of the test.

5.5.5.4.3.5 The manufacturer's specified standard cover that comes with the unit shall be used during the test.

5.6 4.4 **Test Procedure**

5.6.1 4.4.1 The test shall start when the water temperature has been at 102°F, ±2°F, (at 87°F, ± 2°F for swim spas) for at least a four hour stabilizing period.

5.6.2 4.4.2 Record water temperature.

5.6.2.1 4.4.2.1 The thermocouple shall be located three to five inches below the water level and centrally located relative to the shape of the spa.

5.6.3 4.4.3 Record ambient air temperature at one point located twelve to eighteen inches a maximum of one to one and a half feet above spa cover level and six to eight inches from the chamber wall . The temperature probe will be positioned and out of direct airflow from the chamber temperature control system and/or circulation fan.

5.6.4 4.4.4 **Data Recording**

5.6.4.1 4.4.4.1 Record temperatures at a maximum interval of 5 4 minutes.

5.6.4.2 4.4.4.2 Measure voltage, current, and power factor (OPTIONAL) at a maximum interval of 5 4 minutes.

5.6.4.3 4.4.4.3 Record watt-hours, voltage and current used during entire Test Period.

5.6.4.4 4.4.4.4 Record elapsed time during Test Record.

5.6.5 4.4.5 Record the total energy use for the period of test, starting at the end of the first heating cycle after the stabilization period and finishing at the end of the first heating cycle after 72 hours has elapsed.

Exception: For spas without heaters, substitute heating cycle with filter or purge cycle.

5.6.6 4.4.6 The unit shall remain covered and in the default operation mode during the test. Energy-conserving circulation functions, if present, must not be enabled if not appropriate for continuous, long-term use. The minimum filtration rate shall be 12 water turns within a 24 hour period. Ancillary equipment including, but not limited to lights, audio systems, and water treatment devices, shall remain connected to the mains but may be turned off during the test if their controls are user accessible.

SECTION 6 5

FORMULAS

~~6.1 5.1 The measured standby power (P_{meas}) shall be determined by E/t:~~

~~$P_{meas} = E/t$~~

~~Where:~~

~~E = total energy use during the test (Wh)~~

~~t = length of test (hr)~~

~~6.2 5.2 The measured standby power (P_{meas}) shall be normalized (P_{norm}) to a temperature difference of 37°F using the equation:~~

~~$P_{norm} = P_{meas} (? T_{ideal} / ? T_{meas})$~~

~~Where:~~

~~$? T_{ideal} = 37°F$~~

~~$? T_{meas} = T_{water\ avg} - T_{air\ avg}$~~

~~$T_{water\ avg}$ = Average water temperature during test~~

~~$T_{air\ avg}$ = Average air temperature during test.~~

~~6.3 5.3 The normalized standby power (P_{norm}) shall not be greater than maximum standby power (P_{max}):~~

~~$P_{max} = 5(V^{2/3})$~~

~~Where:~~

~~V = fill volume in gallons~~

~~SECTION 7 6.~~

~~LABEL REQUIREMENTS~~

~~**7.1 6.1** The manufacturer shall include either on or in close proximity to the spa's product label the standby watts rating.~~

~~**7.2 6.2** Wording to be in the following format:~~

~~Per ANSI-14 Measured Standby Power Consumption XXXX watts/hr (Maximum Allowable Standby Power Consumption XXXX watts/hr)~~

APPENDIX A (Informative)

This appendix is not part of the American National Standard and is included for information only.

Minimum Chamber Requirements

Chamber internal dimensions:

Minimum 7 feet high

Minimum 1 foot from spa to chamber wall or other internal barrier.

Air flow: If air circulation from the air temperature control equipment is intermittent, install 1 fan in one corner of the chamber, 6 feet from the floor. Direct toward the center of the floor. The fan should move at least 80 CFM of air, and not more than 100 CFM. If the air temperature control equipment continuously circulates air in the chamber, no fan is required.

Chamber Insulation: Walls shall be insulated adequately to maintain proper ambient temperatures.

Chamber Floor: The floor may be insulated with 2" thick R-13 polisocyanurate with radiant barrier on both sides. This insulation shall be laid directly on a level concrete floor or slab or other firm, level surface created for it. The insulating layer shall be sheeted with minimum 1/2" thick plywood to protect the insulation layer and provide a smooth surface to properly position the spas to be tested.

APPENDIX B (Informative)

This appendix is not part of the American National Standard and is included for information only.

Procedure for Establishing Test Facility and Equipment Compliance

This section provides an evaluation procedure to qualify a test facility for the sole purpose of testing to the requirements outlined in **ANSI/APSP 14 Portable Spa Energy Efficiency Standard.**

All evaluations are to be conducted by a CB as defined in Section 3 of this standard.

Any testing performed, data and results obtained, or facility and equipment used prior to the adoption of ANSI/APSP 14 is exempt from the requirements of Appendix B.

1. Test Chamber

1.1 The test chamber will be evaluated to establish compliance with the construction requirements outlined in Appendix A.

1.2 The test chamber must demonstrate the capability to maintain the test environment(s) called for in Section 4 of this standard.

1.2.1 The test chamber will be evaluated operating at the test parameters for a minimum of three hours.

2. Data Measuring and Recording Equipment

2.1. The operator of the test facility will provide proof of calibration traceable to NIST or other national standard for all equipment used to measure and collect data as outlined in Section 4 of this standard. 2.2 The maximum period before equipment recalibration is required will be eighteen months from its previous calibration date.

2.2.1 If the test equipment comes from the manufacturer with a Certificate of Calibration, the time frame for recalibration will be a maximum of eighteen months from date of purchase.

2.3 Calibration records (electronic or hard copy), will be kept by the test facility and made available upon request by the evaluating CB.

3. Training of Personnel

3.1 The test facility will designate the person, and alternates, responsible for training other employees in the requirements of performing the ANSI 14 Portable Spa Energy Efficiency Testing.

3.1.1 Training records will include:

The person(s) doing the training

Date(s) the training took place

Facility and chamber used

3.2 The test facility will keep employee training records and provide them to the CB upon request.

4. Record Maintenance

4.1 Upon request of the CB, the test facility will provide a copy of all forms used, (electronic or hard copy), to record the required test data.

4.2 The CB may review previous testing performed for compliance to this standard.

5. Documentation of Test Facility Compliance

5.1 If the test facility successfully completes the evaluation, the CB will issue the appropriate document(s) indicating compliance with Appendix B of this standard.

5.2 If found non-conforming, the CB will issue a report of corrective actions the test facility must address to be compliant.

5.2.1 A second site visit to verify the corrective actions will be at the discretion of the CB.

5.3 Upon the test facility addressing and providing the necessary documentation, the CB will issue the appropriate document(s) indicating compliance with Appendix B of this standard.

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Sub Code: Residential

Date Submitted	2/28/2011	**Section**	ACCA	**Proponent**	T Stafford
Chapter	43	**Affects HVHZ**	No	**Attachments**	No

TAC Recommendation Pending Review
Commission Action Pending Review

Comments

General Comments No **Alternate Language** No

Related Modifications

Summary of Modification

Correct reference section numbers for ACCA Manual D. ACCA Manual J is deleted since it is no longer referenced in the code.

Rationale

The proposed code change corrects a conflict within the updated code. The Florida specific need is established due to the conflict within the updated code. The proposed code change will have no impact on small business.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact.

Impact to building and property owners relative to cost of compliance with code

No impact.

Impact to industry relative to the cost of compliance with code

No impact.

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Not applicable. Corrects a confilct within the updated code.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Not applicable. Corrects a confilct within the updated code.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

Not applicable. Corrects a confilct within the updated code.

Does not degrade the effectiveness of the code

Not applicable. Corrects a confilct within the updated code.

Standard reference number	Title	Referenced in Code Section Number
ACCA Manual D-1995	Residential Duct Systems	~~N1110.AB.1~~ **M1601.1**
~~ACCA Manual J-2003~~	~~Residential Load Calculation, Eighth Edition with posted updates/errata~~	~~N1107.AB.1~~